

## Jeremy M. Hutson: Publication List, March 2020

### Review Articles and Perspectives

248. J. M. Hutson,  
"Ultracold Chemistry",  
*Science* 327, 788-789 (2010).
247. J. M. Hutson and P. Soldán,  
"Molecular collisions in ultracold atomic gases",  
*Int. Rev. Phys. Chem.* 26, 1-28 (2007). (61 citations)
246. J. M. Hutson and P. Soldán,  
"Molecule formation in ultracold atomic gases",  
*Int. Rev. Phys. Chem.* 25, 497-526 (2006). (99 citations)
245. J. M. Hutson,  
"Van der Waals molecules",  
Chapter C1.4, pp. 2157-2173 in *The Encyclopedia of Chemical Physics and Physical Chemistry*,  
ed. J. H. Moore and N. D. Spencer, Institute of Physics, Bristol (2001).
244. J. M. Hutson,  
"Coupled channel methods for solving the bound-state Schrödinger equation",  
*Computer Physics Communications* 84, 1-18 (1994). (110 citations)
243. J. M. Hutson,  
"An introduction to the dynamics of Van der Waals complexes",  
*Advances in Molecular Vibrations and Collision Dynamics* 1A, 1-46 (1991). (139 citations)
242. J. M. Hutson,  
"Dynamics of Van der Waals complexes: beyond atom-diatom systems",  
pp. 67-80 in *Dynamics of Polyatomic Van der Waals Complexes*, ed. N. Halberstadt and  
K. C. Janda, Plenum, New York (1990).
241. J. M. Hutson,  
"Intermolecular forces from the spectroscopy of Van der Waals complexes",  
*Annual Review of Physical Chemistry* 41, 123-154 (1990). (269 citations)
240. A. D. Buckingham, P. W. Fowler and J. M. Hutson,  
"Theoretical studies of Van der Waals molecules and intermolecular forces",  
*Chemical Reviews* 88, 963-988 (1988). (557 citations)

### Research Papers

239. Z. Ji, T. Gong, Y. He, J. M. Hutson, Y. Zhao, L. Xiao and S. Jia,  
"Microwave coherent control of ultracold ground-state molecules formed by short-range  
photoassociation",  
submitted to *Phys. Chem. Chem. Phys.* March 2020; available at arXiv:2002.06390, (5 pages).
238. M. Hughes, M. D. Frye, R. Sawant, G. Bhole, J. A. Jones, S. L. Cornish, M. R. Tarbutt,  
J. M. Hutson, D. Jaksch and J. Mur-Petit,  
"A robust entangling gate for polar molecules using magnetic and microwave fields",  
submitted to *Phys. Rev. Lett.* December 2019; available at arXiv:1912.09419, (12 pages).
237. E. Bentine, A. J. Barker, K. Luksch, S. Sunami, T. L. Harte, B. Yuen, C. J. Foot, D. J. Owens  
and J. M. Hutson,  
"Inelastic collisions in radiofrequency-dressed mixtures of ultracold atoms",  
submitted to *Phys. Rev. Res.* December 2019; available at arXiv:1912.02737, (12 pages).
236. M. D. Frye, S. L. Cornish and J. M. Hutson,  
"Prospects of forming high-spin polar molecules from ultracold atoms",  
submitted to *Phys. Rev. X* October 2019; available at arXiv:1910.09641, (11 pages).
235. M. D. Frye and J. M. Hutson,  
"Characterizing quasibound states and scattering resonances",  
*Phys. Rev. Res.* 2, 013291 (2020).

234. R. Sawant, J. A. Blackmore, P. D. Gregory, J. Mur-Petit, J. Aldegunde, D. Jaksch, J. M. Hutson, M. R. Tarbutt and S. L. Cornish, "Ultracold molecules as qudits", *J. Phys. B* 22, 013027/1-12 (2020).
233. L. Caldwell, H. J. Williams, N. J. Fitch, J. Aldegunde, J. M. Hutson, B. E. Sauer and M. R. Tarbutt, "Long rotational coherence times of molecules in a magnetic trap", *Phys. Rev. Lett.* 124, 063001/1-6 (2020).
232. F. Schäfer, H. Konishi, A. Bouscal, T. Yagami, M. D. Frye, J. M. Hutson and Y. Takahashi, "Ultracold collisions in the Yb-Li mixture system", accepted for *IOP Journal of Physics: Conference Series* November 2019; available at [arXiv:1911.06538](https://arxiv.org/abs/1911.06538), (9 pages).
231. T. Karman and J. M. Hutson, "Microwave shielding of ultracold polar molecules with imperfectly circular polarization", *Phys. Rev. A* 100, 052704 (2019).
230. M. D. Frye and J. M. Hutson, "Time delays in ultracold atomic and molecular collisions", *Phys. Rev. Res.* 1, 033023 (2019).  
Paper selected as an *Editors' Suggestion*
229. B. C. Yang, M. D. Frye, A. Guttridge, J. Aldegunde, P. S. Żuchowski, S. L. Cornish and J. M. Hutson, "Magnetic Feshbach resonances in ultracold collisions between Cs and Yb atoms", *Phys. Rev. A* 100, 022704 (2019).
228. M. D. Frye, B. C. Yang and J. M. Hutson, "Ultracold collisions of Cs in excited Zeeman and hyperfine states", *Phys. Rev. A* 100, 022702 (2019).
227. P. D. Gregory, M. D. Frye, J. A. Blackmore, E. M. Bridge, R. Sawant, J. M. Hutson and S. L. Cornish, "Sticky collisions of ultracold RbCs molecules", *Nature Communications* 10, 3104 (2019).
226. J. M. Hutson and C. R. Le Sueur, "MOLSCAT: a program for non-reactive quantum scattering calculations on atomic and molecular collisions", *Comp. Phys. Comm.* 241, 9-18 (2019). [50th Anniversary Issue]
225. J. M. Hutson and C. R. Le Sueur, "BOUND and FIELD: programs for calculating bound states of interacting pairs of atoms and molecules", *Comp. Phys. Comm.* 241, 1-8 (2019). [50th Anniversary Issue]
224. J. A. Blackmore, L. Caldwell, P. D. Gregory, E. M. Bridge, R. Sawant, J. Aldegunde, J. Mur-Petit, D. Jaksch, J. M. Hutson, B. E. Sauer, M. R. Tarbutt and S. L. Cornish, "Ultracold molecules for quantum simulation: rotational coherences in CaF and RbCs", *Quantum Sci. Technol.* 4, 014010/1-19 (2019).
223. T. Karman, M. D. Frye, J. D. Reddel and J. M. Hutson, "Near-threshold bound states of the dipole-dipole interaction", *Phys. Rev. A* 98, 062502/1-9 (2018).
222. T. Karman and J. M. Hutson, "Microwave shielding of ultracold polar molecules", *Phys. Rev. Lett.* 121, 163401/1-5 (2018).
221. A. Guttridge, M. D. Frye, B. C. Yang, J. M. Hutson and S. L. Cornish, "Two-photon photoassociation spectroscopy of CsYb: ground-state interaction potential and interspecies scattering lengths", *Phys. Rev. A* 98, 022707/1-10 (2018).

220. V. Barbé, A. Ciamei, B. Pasquiou, L. Reichsöllner, F. Schreck, P. S. Żuchowski and J. M. Hutson, "Observation of Feshbach resonances between alkali and closed-shell atoms", *Nature Physics* 14, 881-884 (2018).
219. A. Guttridge, S. A. Hopkins, M. D. Frye, J. J. McFerran, J. M. Hutson and S. L. Cornish, "Production of ultracold Cs\*Yb molecules by photoassociation", *Phys. Rev. A* 97, 063414/1-8 (2018).
218. J. Aldegunde and J. M. Hutson, "Hyperfine structure of  $^2\Sigma$  molecules containing alkaline-earth-metal atoms", *Phys. Rev. A* 97, 042505/1-9 (2018).
217. J. Aldegunde and J. M. Hutson, "Hyperfine structure of alkali-metal diatomic molecules", *Phys. Rev. A* 96, 042506/1-4 (2017).
216. D. J. Owens and J. M. Hutson, "Inelastic losses in radiofrequency-dressed traps for ultracold atoms", *Phys. Rev. A* 96, 042707/1-10 (2017).
215. M. D. Frye and J. M. Hutson, "Characterizing Feshbach resonances in ultracold scattering calculations", *Phys. Rev. A* 96, 042705/1-8 (2017).
214. A. Bennett, K. Gibble, S. Kokkelmans and J. M. Hutson, "Atomic clock measurements of quantum scattering phase shifts spanning Feshbach resonances at ultralow fields", *Phys. Rev. Lett.* 119, 113401/1-5 (2017).
213. P. D. Gregory, J. A. Blackmore, J. Aldegunde, J. M. Hutson, and S. L. Cornish, "The ac Stark effect in ultracold polar  $^{87}\text{Rb}^{133}\text{Cs}$  molecules", *Phys. Rev. A* 96, 021402(R) (2017). [Rapid Communication]  
Paper selected as an *Editors' Suggestion*
212. A. Guttridge, S. A. Hopkins, S. L. Kemp, M. D. Frye, J. M. Hutson, and S. L. Cornish, "Interspecies thermalization in an ultracold mixture of Cs and Yb in an optical trap", *Phys. Rev. A* 96, 012704/1-10 (2017).
211. M. Gröbner, P. Weinmann, E. Kirilov, H.-C. Nägerl, P. S. Julienne, C. R. Le Sueur and J. M. Hutson, "Observation of interspecies Feshbach resonances in an ultracold  $^{39}\text{K}$ - $^{133}\text{Cs}$  mixture and refinement of interaction potentials", *Phys. Rev. A* 95, 022715/1-10 (2017).
210. P. D. Gregory, J. Aldegunde, J. M. Hutson, and S. L. Cornish, "Controlling the rotational and hyperfine state of ultracold  $^{87}\text{Rb}^{133}\text{Cs}$  Molecules", *Phys. Rev. A* 94, 041403(R)/1-5 (2016). [Rapid Communication]
209. J. J. Lutz and J. M. Hutson, "Deviations from Born-Oppenheimer mass scaling in spectroscopy and ultracold molecular physics", *J. Mol. Spectrosc.* 330, 43-56 (2016). (Special Issue in honor of Robert Le Roy)
208. P. K. Molony, P. D. Gregory, A. Kumar, C. R. Le Sueur, J. M. Hutson and S. L. Cornish, "Production of ultracold  $^{87}\text{Rb}^{133}\text{Cs}$  in the absolute ground state: complete characterisation of the STIRAP transfer", *ChemPhysChem* 17, 3811-3817 (2016). (Special Issue on Cold Molecules)
207. D. J. Owens, T. Xie and J. M. Hutson, "Creating Feshbach resonances for ultracold molecule formation with radiofrequency fields", *Phys. Rev. A* 94, 023619/1-5 (2016).
206. P. K. Molony, A. Kumar, P. D. Gregory, R. Kliese, T. Puppe, C. R. Le Sueur, J. Aldegunde, J. M. Hutson and S. L. Cornish, "Measurement of the binding energy of ultracold  $^{87}\text{Rb}^{133}\text{Cs}$  molecules using an offset-free optical

- frequency comb”,  
Phys. Rev. A 94, 022507/1-8 (2016).
205. M. D. Frye, M. Morita, C. L. Vaillant, D. G. Green and J. M. Hutson,  
“The approach to chaos in ultracold atomic and molecular physics: statistics of near-threshold bound states for Li+CaH and Li+CaF”,  
Phys. Rev. A 93, 052713/1-11 (2016).
204. D. G. Green, C. L. Vaillant, M. D. Frye, M. Morita and J. M. Hutson,  
“Quantum chaos in ultracold collisions between Yb(<sup>1</sup>S<sub>0</sub>) and Yb(<sup>3</sup>P<sub>2</sub>)”,  
Phys. Rev. A 93, 022703/1-5 (2016).
203. J. Lim, M. D. Frye, J. M. Hutson and M. R. Tarbutt,  
“Modeling sympathetic cooling of molecules by ultracold atoms”,  
Phys. Rev. A 92, 053419/1-15 (2015).
202. M. D. Frye, P. S. Julienne and J. M. Hutson,  
“Cold atomic and molecular collisions: approaching the universal loss regime”,  
New J. Phys. 17, 045019/1-13 (2015).
201. P. K. Molony, P. D. Gregory, Z. Ji, B. Lu, M. P. Köppinger, C. R. Le Sueur, C. L. Blackley, J. M. Hutson and S. L. Cornish,  
“Creation of ultracold <sup>87</sup>Rb<sup>133</sup>Cs molecules in the rovibrational ground state”,  
Phys. Rev. Lett. 113, 255301/1-5 (2014). (169 citations)
200. T. Takekoshi, L. Reichsöllner, A. Schindewolf, J. M. Hutson, C. R. Le Sueur, O. Dulieu, F. Ferlaino, R. Grimm and H.-C. Nägerl,  
“Ultracold dense samples of dipolar RbCs molecules in the rovibrational and hyperfine ground state”,  
Phys. Rev. Lett. 113, 205301/1-5 (2014).  
Paper selected as an *Editors' Suggestion* (204 citations)
199. B. Huang, K. M. O'Hara, R. Grimm, J. M. Hutson and D. S. Petrov,  
“The three-body parameter for Efimov states in lithium-6”,  
Phys. Rev. A 90, 043636/1-9 (2014).  
Paper selected as an *Editors' Suggestion*
198. H. J. Patel, C. L. Blackley, S. L. Cornish and J. M. Hutson,  
“Feshbach resonances, molecular bound states and prospects of ultracold molecule formation in mixtures of ultracold K and Cs”,  
Phys. Rev. A 90, 032716/1-10 (2014).
197. P. S. Julienne and J. M. Hutson,  
“Contrasting the wide Feshbach resonances in <sup>6</sup>Li and <sup>7</sup>Li”,  
Phys. Rev. A 89, 052715/1-9 (2014).
196. B. Huang, L. A. Sidorenkov, R. Grimm and J. M. Hutson,  
“Observation of the second triatomic resonance in Efimov's scenario”,  
Phys. Rev. Lett. 112, 190401/1-6 (2014).  
Paper selected for a *Viewpoint in Physics* at <http://physics.aps.org/articles/v7/51> (82 citations)
195. M. D. Frye and J. M. Hutson,  
“Collision cross sections for the thermalization of cold gases”,  
Phys. Rev. A 89, 052705/1-5 (2014).
194. C. L. Blackley, P. S. Julienne and J. M. Hutson,  
“Effective-range approximations for resonant scattering of cold atoms”,  
Phys. Rev. A 89, 042701/1-10 (2014).  
Paper selected as an *Editors' Suggestion*
193. M. P. Köppinger, D. J. McCarron, D. L. Jenkin, P. K. Molony, H.-W. Cho, S. L. Cornish, C. R. Le Sueur, C. L. Blackley and J. M. Hutson,  
“Production of optically trapped <sup>87</sup>RbCs Feshbach molecules”,  
Phys. Rev. A 89, 033604/1-8 (2014).

192. J. J. Lutz and J. M. Hutson,  
"Reactions between cold methyl halide molecules and alkali-metal atoms",  
J. Chem. Phys. 140, 014303/1-9 (2014).
191. M. L. González-Martínez and J. M. Hutson,  
"Sympathetic cooling of fluorine atoms with ultracold atomic hydrogen",  
Phys. Rev. A 88, 053420/1-10 (2013).
190. M. L. González-Martínez and J. M. Hutson,  
"Ultracold hydrogen atoms: a versatile coolant to produce ultracold molecules",  
Phys. Rev. Lett. 111, 203004/1-6 (2013).
189. M. L. González-Martínez and J. M. Hutson,  
"Magnetically tunable Feshbach resonances in  $\text{Li} + \text{Yb}(^3P_J)$ ",  
Phys. Rev. A 88, 020701(R)/1-5 (2013). [Rapid Communication]
188. D. A. Brue and J. M. Hutson,  
"Prospects of forming molecules in  $^2\Sigma$  states by magnetoassociation of alkali-metal atoms  
with Yb",  
Phys. Rev. A 87, 052709/1-12 (2013).
187. G. Zürn, T. Lompe, A. N. Wenz, S. Jochim, P. S. Julienne and J. M. Hutson,  
"Precise characterization of  $^6\text{Li}$  Feshbach resonances using trap-sideband-resolved RF spectroscopy  
of weakly bound molecules",  
Phys. Rev. Lett. 110, 135301/1-5 (2013). (112 citations)
186. M. Berninger, A. Zenesini, B. Huang, W. Harm, H.-C. Nägerl, F. Ferlaino, R. Grimm,  
P. S. Julienne and J. M. Hutson,  
"Feshbach resonances, weakly bound molecular states and coupled-channel potentials for cesium  
at high magnetic field",  
Phys. Rev. A 87, 032517/1-17 (2013). (50 citations)
185. J. F. E. Croft and J. M. Hutson,  
"Multichannel Quantum Defect Theory for cold molecular collisions with a strongly anisotropic  
potential energy surface",  
Phys. Rev. A 87, 032710/1-7 (2013).
184. C. L. Blackley, C. R. Le Sueur, J. M. Hutson, D. J. McCarron, M. P. Köppinger, H.-W. Cho,  
D. L. Jenkin and S. L. Cornish,  
"Feshbach resonances in ultracold  $^{85}\text{Rb}$ ",  
Phys. Rev. A 87, 033611/1-7 (2013).
183. H.-W. Cho, D. J. McCarron, M. P. Köppinger, D. L. Jenkin, K. L. Butler, P. S. Julienne,  
C. L. Blackley, C. R. Le Sueur, J. M. Hutson and S. L. Cornish,  
"Feshbach spectroscopy of an ultracold mixture of  $^{85}\text{Rb}$  and  $^{133}\text{Cs}$ ",  
Phys. Rev. A 87, 010703(R)/1-5 (2013). [Rapid Communication]
182. J. F. E. Croft, J. M. Hutson and P. S. Julienne,  
"Optimized Multichannel Quantum Defect Theory for cold molecular collisions",  
Phys. Rev. A 86, 022711/1-7 (2012).
181. T. Takekoshi, M. Debatin, R. Rameshan, F. Ferlaino, R. Grimm, H.-C. Nägerl, C. R. Le Sueur,  
J. M. Hutson, P. S. Julienne, S. Kotochigova and E. Tiemann,  
"Towards the production of ultracold ground-state RbCs molecules:  
Feshbach resonances, weakly bound states, and the coupled-channel model",  
Phys. Rev. A 85, 032506/1-14 (2012). (96 citations)
180. D. A. Brue and J. M. Hutson,  
"Magnetically tunable Feshbach resonances in ultracold Li-Yb mixtures",  
Phys. Rev. Lett. 108, 043201/1-5 (2012). (50 citations)
179. A. O. G. Wallis and J. M. Hutson,  
"Optically induced conical intersections in traps for ultracold atoms and molecules",  
Phys. Rev. A 84, 051402(R)/1-4 (2011). [Rapid Communication]
178. M. L. González-Martínez and J. M. Hutson,  
"Effect of hyperfine interactions on ultracold molecular collisions:

- NH( $^3\Sigma^-$ ) with Mg( $^1S$ ) in magnetic fields”,  
Phys. Rev. A 84, 052706/1-11 (2011).
177. J. F. E. Croft, A. O. G. Wallis, J. M. Hutson and P. S. Julienne,  
“Multichannel Quantum Defect Theory for cold molecular collisions”,  
Phys. Rev. A 84, 042703/1-9 (2011).
176. M. Berninger, A. Zenesini, B. Huang, W. Harm, H.-C. Nägerl, F. Ferlaino, R. Grimm,  
P. S. Julienne and J. M. Hutson,  
“Universality of the three-body parameter for Efimov states in ultracold cesium”,  
Phys. Rev. Lett. 107, 120401/1-5 (2011). (133 citations)
175. W. Skomorowski, R. Moszyński, M. L. González-Martínez and J. M. Hutson,  
“Cold collisions of an open-shell S-state atom with a  $^2\Pi$  molecule:  
N( $^4S$ ) colliding with OH in a magnetic field”,  
Phys. Chem. Chem. Phys. 13, 19077-19088 (2011).
174. L. P. Parazzoli, N. J. Fitch, P. S. Żuchowski, J. M. Hutson and H. J. Lewandowski,  
“Large effects of electric fields on atom-molecule collisions at millikelvin temperatures”,  
Phys. Rev. Lett. 106, 193201/1-4 (2011).
173. S. Tokunaga, W. Skomorowski, P. S. Żuchowski, R. Moszynski, J. M. Hutson, E. A. Hinds and  
M. R. Tarbutt,  
“Prospects for sympathetic cooling of molecules in electrostatic, ac and microwave traps”,  
Eur. Phys. J. D 65, 141-149 (2011).
172. A. O. G. Wallis, E. J. J. Longdon, P. S. Żuchowski and J. M. Hutson,  
“The prospects of sympathetic cooling of NH molecules with Li atoms”,  
Eur. Phys. J. D, 65, 151-160 (2011).
171. L. M. C. Janssen, P. S. Żuchowski, A. van der Avoird, G. C. Groenenboom and J. M. Hutson,  
“Cold and ultracold NH–NH collisions in magnetic fields”,  
Phys. Rev. A 83, 022713/1-8 (2011).
170. L. M. C. Janssen, P. S. Żuchowski, A. van der Avoird, J. M. Hutson and G. C. Groenenboom,  
“Cold and ultracold NH–NH collisions: the field-free case”,  
J. Chem. Phys. 134, 124309/1-9 (2011).
169. W. Skomorowski, F. Pawłowski, T. Korona, R. Moszyński, P. S. Żuchowski and J. M. Hutson,  
“Interaction between LiH molecule and Li atom from state-of-the-art electronic structure  
calculations”,  
J. Chem. Phys. 134, 114109/1-16 (2011).
168. P. S. Żuchowski and J. M. Hutson,  
“Cold collisions of N atoms and NH molecules in magnetic fields”,  
Phys. Chem. Chem. Phys. 13, 3669-3680 (2011).
167. P. S. Żuchowski, J. Aldegunde and J. M. Hutson,  
“Ultracold RbSr molecules can be formed by magnetoassociation”,  
Phys. Rev. Lett. 105, 153201/1-4 (2010). (78 citations)
166. P. S. Żuchowski and J. M. Hutson,  
“Reactions of ultracold alkali metal dimers”,  
Phys. Rev. A 81, 060703(R)/1-4 (2010). [Rapid Communication] (129 citations)
165. J. G. Danzl, M. J. Mark, E. Haller, M. Gustavsson, R. Hart, J. Aldegunde, J. M. Hutson and  
H.-C. Nägerl,  
“An ultracold, high-density sample of rovibronic ground-state molecules in an optical lattice”,  
Nature Physics 6, 265-270 (2010). (223 citations)
164. H. Ran, J. Aldegunde and J. M. Hutson,  
“Hyperfine structure in the microwave spectra of ultracold polar molecules”,  
New J. Phys. 12, 043015/1-20 (2010).
163. A. O. G. Wallis and J. M. Hutson,  
“Production of ultracold NH molecules by sympathetic cooling with Mg”,  
Phys. Rev. Lett. 103, 183201/1-4 (2009). (60 citations)

162. J. M. Hutson, M. Beyene and M. L. González-Martínez,  
“Dramatic reductions in inelastic cross sections for ultracold collisions near Feshbach resonances”,  
Phys. Rev. Lett. 103, 163201/1-4 (2009).
161. J. Aldegunde, H. Ran and J. M. Hutson,  
“Manipulating ultracold polar molecules with microwave radiation:  
the influence of hyperfine structure”,  
Phys. Rev. A 80, 043410/1-5 (2009).
160. A. O. G. Wallis, S. A. Gardiner and J. M. Hutson,  
“Conical intersections in laboratory coordinates with ultracold molecules”,  
Phys. Rev. Lett. 103, 083201/1-4 (2009).
159. P. S. Żuchowski and J. M. Hutson,  
“Low-energy collisions of NH<sub>3</sub> and ND<sub>3</sub> with ultracold Rb atoms”,  
Phys. Rev. A 79, 062708/1-12 (2009). (48 citations)
158. P. Soldán, P. S. Żuchowski and J. M. Hutson,  
“Prospects for sympathetic cooling of polar molecules:  
NH with alkali-metal and alkaline-earth atoms – a new hope”,  
Faraday Discussion 142, 191-201 (2009).
157. S. Ghosal, R. J. Doyle, C. P. Koch and J. M. Hutson,  
“Stimulating the production of deeply bound RbCs molecules with laser pulses:  
the role of spin-orbit coupling in forming ultracold molecules”,  
New J. Phys. 11, 055011/1-26 (2009).
156. J. Aldegunde and J. M. Hutson,  
“The hyperfine energy levels of alkali metal dimers:  
ground-state homonuclear molecules in magnetic fields”,  
Phys. Rev. A 79, 013401/1-8 (2009).
155. J. M. Hutson, E. Tiesinga and P. S. Julienne,  
“Avoided crossings between bound states of ultracold Cesium dimers”,  
Phys. Rev. A 78, 052703/1-10 (2008).
154. J. Aldegunde, B. A. Rivington, P. S. Żuchowski and J. M. Hutson,  
“The hyperfine energy levels of alkali metal dimers:  
ground-state polar molecules in electric and magnetic fields”,  
Phys. Rev. A 78, 033434/1-8 (2008). (72 citations)
153. P. S. Żuchowski and J. M. Hutson,  
“Prospects for producing ultracold NH<sub>3</sub> molecules by sympathetic cooling:  
a survey of interaction potentials”,  
Phys. Rev. A 78, 022701/1-9 (2008).
152. M. P. Deskevich, A. B. McCoy, J. M. Hutson and D. J. Nesbitt,  
“Large-amplitude quantum mechanics in polyatomic hydrides:  
II. A particle-on-a-sphere model for XH<sub>n</sub> (n = 4, 5)”,  
J. Chem. Phys. 128, 094306/1-13 (2008).
151. M. T. Cvitaš, P. Soldán, J. M. Hutson, P. Honvault and J.-M. Launay,  
“Interactions and dynamics in ultracold Li + Li<sub>2</sub> collisions”,  
J. Chem. Phys. 127, 074302/1-19 (2007). (54 citations)
150. J. M. Hutson,  
“Feshbach resonances in atomic and molecular collisions:  
threshold behaviour and suppression of poles in scattering length”,  
New J. Phys. 9, 152/1-9 (2007). (62 citations)
149. M. L. González-Martínez and J. M. Hutson,  
“Ultracold atom-molecule collisions and bound states in magnetic fields:  
tuning zero-energy Feshbach resonances in He + NH (<sup>3</sup>Σ)”,  
Phys. Rev. A 75, 022702/1-14 (2007). (63 citations)

148. M. Lara, J. L. Bohn, D. E. Potter, P. Soldán and J. M. Hutson, "Cold collisions of OH and Rb. I: the field-free case", *Phys. Rev. A* 75, 012704/1-19 (2007).
147. M. Lara, J. L. Bohn, D. E. Potter, P. Soldán and J. M. Hutson, "Ultracold Rb-OH collisions and prospects for sympathetic cooling", *Phys. Rev. Lett.* 97, 183201/1-4 (2006). (77 citations)
146. R. J. Doyle, D. M. Hirst and J. M. Hutson, "Ab initio potential energy surfaces, bound states and electronic spectrum of the Ar-SH complex", *J. Chem. Phys.* 125, 184312/1-9 (2006).
145. M. T. Cvitaš, P. Soldán and J. M. Hutson, "Long range intermolecular forces in triatomic systems: connecting the atom-diatom and atom-atom-atom representations", *Molec. Phys.* 104, 23-32 (2006).
144. H. Jiang, M. Xu, J. M. Hutson and Z. Bačić, "Ar<sub>n</sub>-HF Van der Waals clusters revisited: energetics and HF vibrational frequency shifts from diffusion Monte Carlo calculations on additive and nonadditive potential energy surfaces for  $n = 1$  to 12", *J. Chem. Phys.* 123, 054305/1-9 (2005).
143. M. T. Cvitaš, P. Soldán, J. M. Hutson, P. Honvault and J.-M. Launay, "Ultracold collisions involving heteronuclear alkali metal dimers", *Phys. Rev. Lett.* 94, 200402/1-4 (2005). (65 citations)
142. G. Quéméner, P. Honvault, J.-M. Launay, P. Soldán, D. E. Potter and J. M. Hutson, "Ultracold quantum dynamics: Spin-polarized K + K<sub>2</sub> collisions with three identical bosons or fermions", *Phys. Rev. A* 71, 032722/1-10 (2005).
141. M. T. Cvitaš, P. Soldán, J. M. Hutson, P. Honvault and J.-M. Launay, "Ultracold Li + Li<sub>2</sub> collisions: bosonic and fermionic cases", *Phys. Rev. Lett.* 94, 033201/1-4 (2005). (85 citations)
140. I. N. Kozin, M. M. Law, J. Tennyson and J. M. Hutson, "Calculating the energy levels of isomerizing tetraatomic molecules. II. The vibrational states of acetylene and vinylidene", *J. Chem. Phys.* 122, 064309/1-9 (2005).
139. I. N. Kozin, M. M. Law, J. Tennyson and J. M. Hutson, "New vibration-rotation code for tetraatomic molecules exhibiting wide-amplitude motion: WAVR4", *Comput. Phys. Commun.* 163, 117-131 (2004).
138. P. Soldán and J. M. Hutson, "Interaction of NH molecules with rubidium atoms: implications for sympathetic cooling and the formation of extremely polar molecules", *Phys. Rev. Lett.* 92, 163202/1-4 (2004).
137. M. Meuwly and J. M. Hutson, "Potential energy surfaces and bound states for the open-shell Van der Waals cluster Br-HF", *J. Chem. Phys.* 119, 8873-8881 (2003).
136. I. N. Kozin, M. M. Law, J. M. Hutson and J. Tennyson, "Calculating the energy levels of isomerizing tetraatomic molecules. I. The rovibrational bound states of Ar<sub>2</sub>HF", *J. Chem. Phys.* 118, 4896-4904 (2003).
135. P. Soldán, M. T. Cvitaš and J. M. Hutson, "Three-body non-additive forces between spin-polarized alkali metal atoms", *Phys. Rev. A* 67, 054702/1-4 (2003).



134. P. Soldán, M. T. Cvitaš, J. M. Hutson, P. Honvault and J.-M. Launay,  
“Quantum dynamics of ultracold Na + Na<sub>2</sub> collisions”,  
Phys. Rev. Lett. 89, 153201/1-4 (2002). (115 citations)
133. M. Xu, Z. Bačić and J. M. Hutson,  
“Clusters containing open-shell molecules: III. Quantum five-dimensional / two-surface bound-state calculations on Ar<sub>n</sub>OH Van der Waals clusters ( $X^2\Pi$ ,  $n = 4$  to 12)”,  
J. Chem. Phys. 117, 4787-4799 (2002).
132. M. Xu, Z. Bačić and J. M. Hutson,  
“Clusters containing open-shell molecules: II. Equilibrium structures of Ar<sub>n</sub>OH Van der Waals clusters ( $X^2\Pi$ ,  $n = 1$  to 15)”,  
J. Chem. Phys. 117, 4777-4786 (2002).
131. P. Soldán and J. M. Hutson,  
“Near-dissociation states and coupled potential curves for the HeN<sup>+</sup> complex”,  
J. Chem. Phys. 117, 3109-3119 (2002).
130. A. Carrington, D. I. Gammie, J. C. Page, A. M. Shaw and J. M. Hutson,  
“Microwave electronic spectrum of the Ne...Ne<sup>+</sup> long-range complex: the interaction potential”,  
J. Chem. Phys. 116, 3662-3669 (2002).
129. J. M. M. Howson and J. M. Hutson,  
“Morphing the He-OCS intermolecular potential”,  
J. Chem. Phys. 115, 5059-5065 (2001).
128. M. Xu, Z. Bačić and J. M. Hutson,  
“Clusters containing open-shell molecules: minimum-energy structures and low-lying isomers of Ar<sub>n</sub>CH ( $X^2\Pi$ ),  $n = 1$  to 15”,  
Faraday Discussions 118, 405-417 (2001).
127. P. Soldán and J. M. Hutson,  
“On the long-range and short-range behavior of potentials from RKHS interpolation”,  
J. Chem. Phys. 112, 4415-4416 (2000).
126. N. J. Wright and J. M. Hutson,  
“Regular and irregular vibrational states: localized anharmonic modes and transition-state spectroscopy of Na<sub>3</sub>”,  
J. Chem. Phys. 112, 3214-3219 (2000).
125. M. Meuwly and J. M. Hutson,  
“Potential energy surfaces and properties of the Br-HBr complex”,  
Phys. Chem. Chem. Phys. 2, 441-446 (2000).
124. M. Meuwly and J. M. Hutson,  
“Intermolecular potential energy surfaces and bound states in F-HF”,  
J. Chem. Phys. 112, 592-600 (2000).
123. M. Medveď, P. W. Fowler and J. M. Hutson,  
“Anisotropic dipole polarisabilities and quadrupole moments of open-shell atoms and ions: O, F, S, Cl, Se, Br and isoelectronic systems”,  
Molec. Phys. 98, 453-463 (2000).
122. J. M. Hutson, S. Liu, J. W. Moskowitz and Z. Bačić,  
“Non-additive intermolecular forces in Ar<sub>n</sub>-HF Van der Waals clusters: effects on the HF vibrational frequency shift”,  
J. Chem. Phys. 111, 8378-8383 (1999).
121. C. F. Roche, A. S. Dickinson and J. M. Hutson,  
“A failing of coupled-states calculations for inelastic and pressure-broadening cross sections: calculations on CO<sub>2</sub>-Ar”,  
J. Chem. Phys. 111, 5824-5828 (1999).
120. M. Meuwly and J. M. Hutson,  
“Morphing ab initio potentials: a systematic study of Ne-HF”,  
J. Chem. Phys. 110, 8338-8347 (1999). (95 citations)

119. M. Meuwly and J. M. Hutson,  
“Predictions of microwave and far-infrared transitions in  $\text{He-H}_2^+$ ”,  
Monthly Notices of the Royal Astronomical Society 302, 790-792 (1999).
118. M. Meuwly and J. M. Hutson,  
“The potential energy surface and near-dissociation states of  $\text{He-H}_2^+$ ”,  
J. Chem. Phys. 110, 3418-3427 (1999).
117. N. J. Wright and J. M. Hutson,  
“Regular and irregular vibrational states: localized anharmonic modes in  $\text{Ar}_3$ ”,  
J. Chem. Phys. 110, 902-911 (1999).
116. J. M. Hutson and A. Ernesti,  
“Properties of  $\text{H}_2^+$  relevant to the  $\text{He-H}_2^+$  intermolecular potential:  
asymptotically increasing multipole moments, polarizabilities and dispersion coefficients”,  
Molec. Phys. 96, 457-462 (1999).
115. F. Thibault, J. Boissoles, C. Boulet, L. Ozanne, J. P. Bouanich, C. F. Roche and J. M. Hutson,  
“Energy-corrected sudden calculations of line widths and line shapes based on coupled states cross  
sections: the test case of  $\text{CO}_2\text{-Ar}$ ”,  
J. Chem. Phys. 109, 6338-6345 (1998).
114. T. G. A. Heijmen, R. Moszynski, P. E. S. Wormer, A. van der Avoird, U. Buck, C. Steinbach and  
J. M. Hutson,  
“Total differential cross sections for  $\text{Ar-CH}_4$  from an ab initio potential”,  
J. Chem. Phys. 108, 4849-4853 (1998).
113. C. F. Roche, A. S. Dickinson, A. Ernesti and J. M. Hutson,  
“Line shape, transport and relaxation properties from intermolecular potential energy surfaces:  
the test case of  $\text{CO}_2\text{-Ar}$ ”,  
J. Chem. Phys. 107, 1824-1834 (1997).
112. A. Ernesti and J. M. Hutson,  
“Non-additive intermolecular forces from the spectroscopy of Van der Waals trimers:  
a comparison of  $\text{Ar}_2\text{-HF}$  and  $\text{Ar}_2\text{-HCl}$ , including H/D isotope effects”,  
J. Chem. Phys. 106, 6288-6301 (1997).
111. M. M. Law and J. M. Hutson,  
“I-NoLLS: a program for interactive nonlinear least-squares fitting of the parameters of physical  
models”,  
Comp. Phys. Comm. 102, 252-268 (1997).
110. J. M. Hutson, A. Ernesti, M. M. Law, C. F. Roche and R. J. Wheatley,  
“The intermolecular potential energy surface for  $\text{CO}_2\text{-Ar}$ : Fitting to high-resolution spectroscopy  
of Van der Waals complexes and second virial coefficients”,  
J. Chem. Phys. 105, 9130-9140 (1996). (75 citations)
109. A. Carrington, D. I. Gammie, A. M. Shaw, S. M. Taylor and J. M. Hutson,  
“Observation of a microwave spectrum of the long-range  $\text{He-H}_2^+$  complex”,  
Chem. Phys. Lett. 260, 395-405 (1996).
108. A. Carrington, C. H. Pyne, A. M. Shaw, S. M. Taylor, J. M. Hutson and M. M. Law,  
“Microwave spectroscopy and interaction potential of the long-range  $\text{He-Kr}^+$  ion:  
an example of Hund’s case (e)”,  
J. Chem. Phys. 105, 8602-8614 (1996).
107. W. B. Chapman, A. Schiffman, J. M. Hutson and D. J. Nesbitt,  
“Rotationally inelastic scattering in  $\text{CH}_4 + \text{He}$ ,  $\text{Ne}$ , and  $\text{Ar}$ . State-to-state cross sections via direct  
infrared laser absorption in crossed supersonic jets”,  
J. Chem. Phys. 105, 3497-3516 (1996).
106. K. M. Atkins and J. M. Hutson,  
“The potential energy surface of  $\text{He-HCN}$  determined by fitting to high-resolution spectroscopic  
data”,  
J. Chem. Phys. 105, 440-450 (1996).

105. C. F. Roche, A. Ernesti, J. M. Hutson and A. S. Dickinson,  
"An evaluation of existing potential energy surfaces for CO<sub>2</sub>-Ar: pressure broadening and high-resolution spectroscopy of Van der Waals complexes",  
J. Chem. Phys. 104, 2156-2166 (1996).
104. K. M. Atkins and J. M. Hutson,  
"A classical trajectory study of Ar + Ar<sub>2</sub> collisions: phase space structures in three degrees of freedom",  
J. Chem. Phys. 103, 9218-9227 (1995).
103. A. Ernesti and J. M. Hutson,  
"Calculations of the spectra of rare gas dimers and trimers: implications for additive and non-additive intermolecular forces in Ne<sub>2</sub>Ar, Ne<sub>2</sub>Kr, Ne<sub>2</sub>Xe, Ar<sub>2</sub>Ne, Ar<sub>3</sub>, Ar<sub>2</sub>Kr and Ar<sub>2</sub>Xe",  
J. Chem. Phys. 103, 3386-3391 (1995).
102. J. P. Reid, C. J. S. M. Simpson, H. M. Quiney and J. M. Hutson,  
"Vibrational relaxation of CO ( $v = 1$ ) by inelastic collisions with <sup>3</sup>He and <sup>4</sup>He",  
J. Chem. Phys. 103, 2528-2537 (1995).
101. A. J. Dobbyn and J. M. Hutson,  
"The influence of the ionisation potential on the simulated ion signal from femtosecond pump-probe experiments",  
Chem. Phys. Lett. 236, 547-552 (1995).
100. R. J. Wheatley and J. M. Hutson,  
"A systematic model potential for Li<sup>+</sup>-H<sub>2</sub>O",  
Molec. Phys. 84, 879-898 (1995).
99. J. M. Hutson,  
"Calculating nuclear quadrupole coupling constants for Van der Waals complexes",  
Molec. Phys. 84, 185-200 (1995).
98. A. Carrington, C. A. Leach, A. J. Marr, A. M. Shaw, M. R. Viant, J. M. Hutson and M. M. Law,  
"Microwave spectroscopy and interaction potential of the long-range He-Ar<sup>+</sup> ion",  
J. Chem. Phys. 102, 2379-2403 (1995).
97. A. Ernesti and J. M. Hutson,  
"Non-additive intermolecular forces from the spectroscopy of Van der Waals trimers: a theoretical study of Ar<sub>2</sub>-HF",  
Phys. Rev. A 51, 239-250 (1995). (71 citations)
96. C. F. Roche, J. M. Hutson and A. S. Dickinson,  
"Calculations of line width and shift cross sections for HCl in Ar",  
Journal of Quantitative Spectroscopy and Radiative Transfer 53, 153-164 (1995).
95. M. J. Weida, J. M. Sperhac, D. J. Nesbitt and J. M. Hutson,  
"Signatures of large-amplitude motion in a weakly bound complex: high-resolution infrared spectroscopy and quantum calculations for He-CO<sub>2</sub>",  
J. Chem. Phys. 101, 8351-8363 (1994). (86 citations)
94. A. E. Thornley and J. M. Hutson,  
"Bound state wavefunctions from coupled channel calculations using log-derivative propagators: application to spectroscopic intensities in Ar-HF",  
J. Chem. Phys. 101, 5578-5584 (1994).
93. A. Ernesti and J. M. Hutson,  
"On the choice of inertial axes for interpreting spectroscopic properties of Van der Waals complexes",  
J. Chem. Phys. 101, 5438-5440 (1994).
92. A. J. Dobbyn and J. M. Hutson,  
"Wavepacket calculations of femtosecond pump-probe experiments on the sodium trimer",  
J. Phys. Chem. 98, 11428-11438 (1994).
91. A. Ernesti and J. M. Hutson,  
"Non-additive intermolecular forces from the spectroscopy of Van der Waals trimers: the effect of

- monomer vibrational excitation in  $\text{Ar}_2\text{-HF}$  and  $\text{Ar}_2\text{-HCl}$ ",  
Faraday Discuss. Chem. Soc., 97, 119-129 (1994).
90. M.-L. Dubernet and J. M. Hutson,  
"Atom – molecule Van der Waals complexes containing open-shell atoms. II: The bound states of  $\text{Cl-HCl}$ ",  
J. Phys. Chem. 98, 5844-5854 (1994). (76 citations)
89. M.-L. Dubernet and J. M. Hutson,  
"Atom – molecule Van der Waals complexes containing open-shell atoms. I: General theory and bending levels",  
J. Chem. Phys. 101, 1939-1958 (1994). (80 citations)
88. A. Ernesti and J. M. Hutson,  
"On the rotational constants of floppy molecules",  
Chem. Phys. Lett. 222, 257-262 (1994).
87. J. M. Hutson and A. E. Thornley,  
"Atom – spherical top Van der Waals complexes: a theoretical study",  
J. Chem. Phys. 100, 2505-2521 (1994).
86. M. J. Elrod, R. J. Saykally, A. R. Cooper and J. M. Hutson,  
"Non-additive intermolecular forces from the spectroscopy of Van der Waals trimers: far-infrared spectra and calculations on  $\text{Ar}_2\text{-DCI}$ ",  
Molec. Phys. 81, 579-598 (1994).
85. S. Green and J. M. Hutson,  
"Spectral line shape parameters for HF in a bath of Ar",  
J. Chem. Phys. 100, 891-898 (1994).
84. H.-C. Chang, F.-M. Tao, W. Klemperer, C. Healey and J. M. Hutson,  
"The Ar-HF intermolecular potential: overtone spectroscopy and *ab initio* calculations",  
J. Chem. Phys. 99, 9337-9349 (1993).
83. M.-L. Dubernet and J. M. Hutson,  
"Potential energy surfaces for Ar-OH ( $X^2\Pi$ ) obtained by fitting to high-resolution spectroscopy",  
J. Chem. Phys. 99, 7477-7486 (1993).
82. A. Schiffman, W. Chapman, J. Nibler, D. J. Nesbitt and J. M. Hutson,  
"A new method for measuring state-to-state rotational energy transfer in crossed supersonic jets",  
J. Chem. Phys. 98, 9513-9521 (1993).
81. A. R. Cooper and J. M. Hutson,  
"Non-additive intermolecular forces from the spectroscopy of Van der Waals trimers: calculations on  $\text{Ar}_2\text{-HCl}$ ",  
J. Chem. Phys. 98, 5337-5351 (1993). (104 citations)
80. B. B. Grayce, R. T. Skodje and J. M. Hutson,  
"Physical origin of oscillations in the three-dimensional collision amplitudes of heavy-light-heavy systems: semiclassical quantization of chaotic scattering",  
J. Chem. Phys. 98, 3929-3944 (1993).
79. A. R. Cooper, S. Jain and J. M. Hutson,  
"Methods for calculating the bound-state energies of Van der Waals trimers: applications to  $\text{Ar}_3$ ",  
J. Chem. Phys. 98, 2160-2169 (1993).
78. C. M. Lovejoy, J. M. Hutson and D. J. Nesbitt,  
"A spectroscopic puzzle in Ar-HF solved: the test of a new potential",  
J. Chem. Phys. 97, 8009-8018 (1992).
77. A. E. Thornley and J. M. Hutson,  
"The intermolecular potential of Ar-acetylene: information from infrared and microwave spectroscopy",  
Chem. Phys. Lett. 198, 1-8 (1992).
76. M.-L. Dubernet, P. A. Tuckey and J. M. Hutson,  
"Parity doubling in open-shell Van der Waals complexes",  
Chem. Phys. Lett. 193, 355-363 (1992).

75. J. M. Hutson,  
"Vibrational dependence of the anisotropic intermolecular potential of Ar-HCl",  
J. Phys. Chem. 96, 4237-4247 (1992). (193 citations)
74. J. M. Hutson,  
"Vibrational dependence of the anisotropic intermolecular potential of Ar-HF",  
J. Chem. Phys. 96, 6752-6767 (1992). (280 citations)
73. J. M. Hutson,  
"Classical path methods for lineshape cross sections",  
pp. 57-72 in *Status and Future Developments in the Study of Transport Properties*, ed. W. A. Wakeham et al., Kluwer, Dordrecht (1992).
72. M.-L. Dubernet, D. R. Flower and J. M. Hutson,  
"The dynamics of open-shell Van der Waals complexes",  
J. Chem. Phys. 94, 7602-7618 (1991). (162 citations)
71. A. R. W. McKellar, J. W. C. Johns and J. M. Hutson,  
"Rare gas – hydrogen chloride complexes: far-infrared observations of Ar-HCl and Xe-HCl",  
pp. 449-460 in *Dynamics of Polyatomic Van der Waals Complexes*, ed. N. Halberstadt and K. C. Janda, Plenum, New York (1990).
70. J. N. L. Connor, H. Sun and J. M. Hutson,  
"Exact and approximate calculations for the effect of potential anisotropy on integral and differential cross sections",  
J. Chem. Soc. Faraday Trans. 86, 1649-1657 (1990).
69. J. M. Hutson,  
"Atom – asymmetric top Van der Waals complexes: angular momentum coupling in Ar-H<sub>2</sub>O",  
J. Chem. Phys. 92, 157-168 (1990). (104 citations)
68. J. M. Hutson,  
"Anisotropic intermolecular forces. III: Rare gas-hydrogen bromide systems",  
J. Chem. Phys. 91, 4455-4461 (1989).
67. J. M. Hutson,  
"The intermolecular potential of Ne-HCl: determination from high-resolution spectroscopy",  
J. Chem. Phys. 91, 4448-4454 (1989).
66. J. M. Hutson and S. Jain,  
"On the coupled-channel calculation of bound states for trimeric systems using hyperspherical coordinates",  
J. Chem. Phys. 91, 4197-4203 (1989).
65. J. M. Hutson, J. A. Beswick and N. Halberstadt,  
"A theoretical study of the Ar<sub>2</sub>HCl Van der Waals cluster",  
J. Chem. Phys. 90, 1337-1344 (1989).
64. J. M. Hutson,  
"Coupled channel bound state calculations: calculating expectation values without wavefunctions",  
Chem. Phys. Lett. 151, 565-569 (1988).
63. J. M. Hutson,  
"The intermolecular potential of Ar-HCl: determination from high-resolution spectroscopy",  
J. Chem. Phys. 89, 4550-4557 (1988). (237 citations)
62. N. J. Bunce, C. L. Forber, C. McInnes and J. M. Hutson,  
"Single-step methods for calculating activation parameters from raw kinetic data",  
J. Chem. Soc. Perkin Trans., II 363-368 (1988).
61. A. C. Peet, D. C. Clary and J. M. Hutson,  
"A comparison of vibrational predissociation rates in rare gas-ethylene clusters",  
J. Chem. Soc. Faraday Trans. II 83, 1719-1731 (1987).
60. J. M. Hutson,  
"Close-coupling calculations of transport and relaxation cross sections for H<sub>2</sub> in Ar",  
J. Chem. Phys. 86, 854-857 (1987).

59. R. J. Le Roy and J. M. Hutson,  
"Improved potential energy surfaces for the interaction of H<sub>2</sub> with Ar, Kr and Xe",  
J. Chem. Phys. 86, 837-853 (1987). *(205 citations)*
58. A. C. Peet, D. C. Clary and J. M. Hutson,  
"Vibrational predissociation of the ethylene dimer",  
Faraday Discuss. Chem. Soc. 82, 327-342 (1986).
57. J. M. Hutson, P. W. Fowler and E. Zaremba,  
"Quadrupolar contributions to the atom-surface Van der Waals interaction",  
Surface Science 175, L775-L781 (1986).
56. J. M. Hutson and P. W. Fowler,  
"The atom-surface interaction potential for He-NaCl: a model based on pairwise additivity",  
Surface Science 173, 337-350 (1986).
55. A. C. Peet, D. C. Clary and J. M. Hutson,  
"Coupled channel calculations on the vibrational predissociation of the ethylene dimer",  
Chem. Phys. Lett. 125, 477-480 (1986).
54. A. E. DePristo, C.-Y. Lee and J. M. Hutson,  
"Dynamics of physisorption for the H<sub>2</sub>,D<sub>2</sub>-Cu(110) and H<sub>2</sub>-Ag(111) systems",  
Surface Science 169, 451-469 (1986).
53. J. M. Hutson,  
"The augmented secular equation method for calculating spectra of Van der Waals complexes",  
J. Chem. Soc. Faraday Trans. 82, 1163-1171 (1986).
52. P. W. Fowler and J. M. Hutson,  
"Pairwise additive models for atom-surface interaction potentials: an ab initio study of He-LiF",  
Phys. Rev. B 33, 3724-3735 (1986).
51. P. W. Fowler and J. M. Hutson,  
"A semiempirical model for atom-surface dispersion coefficients",  
Surface Science 165, 289-302 (1986).
50. J. M. Hutson and R. J. Le Roy,  
"The secular equation/perturbation theory method for calculating spectra of Van der Waals complexes",  
J. Chem. Phys. 83, 1197-1203 (1985).
49. L. Danielson, J.-C. Ruiz Suarez, C. Schwartz, G. Scoles and J. M. Hutson,  
"Very low energy scattering of atoms from crystal surfaces: a quantitative comparison between experiment and theory",  
Faraday Discuss. Chem. Soc. 80, 47-56 (1985).
48. J. M. Hutson, D. C. Clary and J. A. Beswick,  
"Vibrational predissociation of the Ne-C<sub>2</sub>H<sub>4</sub> and Ar-C<sub>2</sub>H<sub>4</sub> Van der Waals complexes",  
J. Chem. Phys. 81, 4474-4480 (1984).
47. J. M. Hutson,  
"Vibrational predissociation and infrared spectrum of the Ar-HCl Van der Waals molecule",  
J. Chem. Phys. 81, 2357-2362 (1984). *(75 citations)*
46. J. M. Hutson,  
"A quadrature scheme for matrix elements between numerical wave functions",  
J. Comp. Phys. 56, 165-172 (1984).
45. C. Douketis, J. M. Hutson, B. J. Orr and G. Scoles,  
"Anisotropic intermolecular forces from Hartree-Fock plus damped dispersion (HFD) calculations: application to Ar-HCl and Ar-HF",  
Molec. Phys. 52, 763-782 (1984). *(85 citations)*
44. J. M. Hutson and F. R. McCourt,  
"Close coupling calculations of transport and relaxation cross sections for H<sub>2</sub> in Ar",  
J. Chem. Phys. 80, 1135-1149 (1984).

43. J. M. Hutson and C. Schwartz,  
"Selective adsorption resonances in the scattering of helium atoms from xenon-coated graphite",  
J. Chem. Phys. 79, 5179-5187 (1983). (65 citations)
42. J. M. Hutson, C. J. Ashton and R. J. Le Roy,  
"Vibrational predissociation of H<sub>2</sub>-, D<sub>2</sub>- and HD-Ar Van der Waals molecules",  
J. Phys. Chem. 87, 2713-2720 (1983).
41. J. M. Hutson and R. J. Le Roy,  
"Predissociation of HD-Ar Van der Waals molecules by internal rotation",  
J. Chem. Phys. 78, 4040-4043 (1983).
40. C. J. Ashton, M. S. Child and J. M. Hutson,  
"Rotational predissociation of the Ar-HCl Van der Waals complex: close-coupled scattering  
calculations",  
J. Chem. Phys. 78, 4025-4039 (1983). (128 citations)
39. R. J. Le Roy, G. C. Corey and J. M. Hutson,  
"Predissociation of weak-anisotropy Van der Waals molecules: theory, approximations and  
practical predictions",  
Faraday Discuss. Chem. Soc. 73, 339-355 (1982).
38. J. M. Hutson, S. Gerstenkorn, P. Luc and J. Sinzelle,  
"Use of calculated centrifugal distortion constants in the analysis of the B←X system of I<sub>2</sub>",  
J. Mol. Spec. 96, 266-278 (1982).
37. J. M. Hutson and B. J. Howard,  
"Anisotropic intermolecular forces II: rare gas-hydrogen fluoride systems",  
Molec. Phys. 45, 791-805 (1982). (128 citations)
36. J. M. Hutson and B. J. Howard,  
"Anisotropic intermolecular forces I: rare gas-hydrogen chloride systems",  
Molec. Phys. 45, 769-790 (1982). (215 citations)  
This paper was selected by the Editors of Molecular Physics  
as one of the *Defining Papers in Molecular Physics (1958-2001)*  
and reprinted as Molec. Phys. 100, 151-164 (2002).
35. D. L. Cooper, J. M. Hutson and T. Uzer,  
"Accidental predissociation in lithium dimer: a theoretical investigation",  
Chem. Phys. Lett. 86, 472-476 (1982).
34. J. M. Hutson and D. L. Cooper,  
"Direct summation over vibrational levels:  $\Lambda$ -doubling in HF<sup>+</sup>",  
J. Chem. Phys. 75, 4502-4506 (1981).
33. J. M. Hutson and B. J. Howard,  
"The intermolecular potential energy surface of Ar-HCl",  
Molec. Phys. 43, 493-516 (1981). (134 citations)
32. J. M. Hutson,  
"Centrifugal distortion constants for diatomic molecules: an improved computational method",  
J. Phys. B (At. Mol. Phys.) 14, 851-857 (1981). (162 citations)
31. J. M. Hutson and B. J. Howard,  
"High resolution radiofrequency spectroscopy of Ar-HCl",  
J. Chem. Phys. 74, 6520-6521 (1981).
30. J. M. Hutson, A. E. Barton, P. R. R. Langridge-Smith and B. J. Howard,  
"Intermolecular potential energy surfaces for Kr-HCl and Ar-HBr",  
Chem. Phys. Lett. 73, 218-223 (1980).
29. J. M. Hutson and B. J. Howard,  
"Spectroscopic properties and potential energy surfaces for atom-diatom Van der Waals  
molecules",  
Molec. Phys. 41, 1123-1141 (1980).

28. J. M. Hutson and B. J. Howard,  
"A new approach to perturbation theory for breakdown of the Born-Oppenheimer approximation",  
*Molec. Phys.* 41, 1113-1122 (1980).
27. B. C. Goodacre, J. M. Hutson and J. Coombs,  
"Enzyme-catalyzed formation of colour in cane juice: inactivation of o-diphenol oxidase by heating  
intact sugar cane",  
*Int. Sugar J.* 82, 11-14 (1980).

#### *Other Journal Articles*

26. J. M. Hutson,  
"International Electronic Mail",  
*J. Mol. Graphics* 5, 57-58 (1987).

#### *Book Chapters*

25. J. M. Hutson,  
"Theory of cold atomic and molecular collisions",  
in R. V. Krems, B. Friedrich and W. C. Stwalley (editors), "Cold Molecules: Theory, Experiment,  
Applications", published by CRC Press (2009). ISBN 978-1420059038.
24. P. Honvault, J.-M. Launay, P. Soldán, M. T. Cvitaš and J. M. Hutson,  
"Quantum dynamics of ultracold alkali + alkali dimer collisions",  
in P. Soldán, M. T. Cvitaš, J. M. Hutson and C. S. Adams (editors), "Interactions Between Cold  
Atoms and Molecules", published by CCP6, Daresbury (2002). ISBN 0-9522736-9-1.
23. J. M. Hutson,  
"Intermolecular potential energy surfaces for bound-state calculations",  
in M. M. Law, I. A. Atkinson and J. M. Hutson (editors), "Rovibrational Bound States in  
Polyatomic Molecules", published by CCP6, Daresbury (1999). ISBN 0-9522736-6-7.
22. N. J. Wright and J. M. Hutson,  
"Regular and irregular vibrational wavefunctions of Ar<sub>3</sub>",  
in R. Prosimiti, J. Tennyson and D. C. Clary (editors), "Molecular Quantum States at  
Dissociation", published by CCP6, Daresbury (1998). ISBN 0-9522736-5-9.
21. J. M. Hutson, M. M. Law and M. Meuwly,  
"Long-range interactions involving atomic and molecular ions",  
in R. Prosimiti, J. Tennyson and D. C. Clary (editors), "Molecular Quantum States at  
Dissociation", published by CCP6, Daresbury (1998). ISBN 0-9522736-5-9.
20. M. M. Law and J. M. Hutson,  
"Interactive control of difficult least-squares fits",  
in A. Ernesti, J. M. Hutson and N. J. Wright (editors), "Fashioning a Model: Optimization  
Methods in Chemical Physics", published by CCP6, Daresbury (1998). ISBN 0-9522736-4-0.
19. C. F. Roche, A. Ernesti, J. M. Hutson and A. S. Dickinson,  
"Calculating line shape parameters from intermolecular potential energy surfaces: HF-Ar, HCl-Ar  
and CO<sub>2</sub>-Ar",  
in A. Ernesti, J. M. Hutson and C. F. Roche (editors), "Molecular Collisions in the Atmosphere",  
published by CCP6, Daresbury (1995). ISBN 0-9522736-3-2.
18. A. J. Dobbyn and J. M. Hutson,  
"Simulating femtosecond experiments on the sodium trimer",  
in M. S. Child and M. M. Law (editors), "Intramolecular Dynamics in the Frequency and Time  
Domains", published by CCP6, Daresbury (1995). ISBN 0-9522736-2-4.
17. J. M. Hutson,  
"Potential energy surfaces from the spectroscopy of Van der Waals complexes",  
in M. M. Law, J. M. Hutson and A. Ernesti (editors), "Fitting Molecular Potential Energy  
Surfaces", published by CCP6, Daresbury (1993). ISBN 0-9522736-0-8.



*Volumes edited*

16. Faraday Discussion 142, "Cold and Ultracold Molecules", Royal Society of Chemistry, (2009).
15. P. Soldán, M. T. Cvitaš, J. M. Hutson and C. S. Adams (editors), "Interactions Between Cold Atoms and Molecules", published by CCP6, Daresbury (2002). ISBN 0-9522736-9-1.
14. Faraday Discussion 118, "Cluster Dynamics", Royal Society of Chemistry, (2002).
13. M. M. Law, I. A. Atkinson and J. M. Hutson (editors), "Rovibrational Bound States in Polyatomic Molecules", published by CCP6, Daresbury (1999). ISBN 0-9522736-6-7.
12. A. Ernesti, J. M. Hutson and N. J. Wright (editors), "Fashioning a Model: Optimization Methods in Chemical Physics", published by CCP6, Daresbury (1998). ISBN 0-9522736-4-0.
11. A. Ernesti, J. M. Hutson and C. F. Roche (editors), "Molecular Collisions in the Atmosphere", published by CCP6, Daresbury (1995). ISBN 0-9522736-3-2.
10. M. M. Law, J. M. Hutson and A. Ernesti (editors), "Fitting Molecular Potential Energy Surfaces", published by CCP6, Daresbury (1993). ISBN 0-9522736-0-8.

*Published computer programs*

9. J. M. Hutson and C. R. Le Sueur, "MOLSCAT: a program for non-reactive quantum scattering calculations on atomic and molecular collisions", version 2019.0, available from <https://github.com/molscat/molscat> (2019).
8. J. M. Hutson and C. R. Le Sueur, "BOUND and FIELD: programs for calculating bound states of interacting pairs of atoms and molecules", version 2019.0, available from <https://github.com/molscat/molscat> (2019).
7. J. M. Hutson, "RESFIT: A program for fitting the energies, widths and partial widths of scattering resonances", version 1 (1982) to version 3 (2005), distributed via Collaborative Computational Project No. 6 of the Engineering and Physical Sciences Research Council, on Molecular Quantum Dynamics.
6. J. M. Hutson, "MOLSCAT: A general-purpose program for performing quantum-mechanical calculations of atom-molecule and atom-surface scattering", version 8 (1984) to version 15 (2002), distributed via Collaborative Computational Project No. 6 of the Engineering and Physical Sciences Research Council, on Molecular Quantum Dynamics. (244 citations)
5. M. M. Law and J. M. Hutson, "I-NoLLS: a program for interactive nonlinear least-squares fitting of the parameters of physical models", (1997), distributed via Collaborative Computational Project No. 6 of the Engineering and Physical Sciences Research Council, on Heavy Particle Dynamics.
4. S. Green and J. M. Hutson, "DCS: A program for calculating differential cross sections from MOLSCAT S-matrices", version 2 (1996), distributed via Collaborative Computational Project No. 6 of the Engineering and Physical Sciences Research Council, on Molecular Quantum Dynamics.

3. J. M. Hutson,  
"BOUND: A program for calculating bound-state energies for weakly bound molecular complexes",  
version 1 (1984) to version 5 (1993), distributed via Collaborative Computational Project No. 6 of the Engineering and Physical Sciences Research Council, on Molecular Quantum Dynamics.  
*(88 citations)*
2. J. M. Hutson and S. Green,  
"SBE: A program for calculating generalised transport and relaxation cross sections from MOLSCAT S-matrices",  
version 2 (1986), distributed via Collaborative Computational Project No. 6 of the Engineering and Physical Sciences Research Council, on Molecular Quantum Dynamics.
1. J. M. Hutson,  
"CDIST: A program for calculating centrifugal distortion constants for diatomic molecules",  
Quantum Chemistry Program Exchange Bulletin 2, 33 (1982).