

## Jeremy M. Hutson: Publication List, January 2022

### Review Articles and Perspectives

262. J. M. Hutson,  
"Ultracold Chemistry",  
*Science* 327, 788-789 (2010).
261. J. M. Hutson and P. Soldán,  
"Molecular collisions in ultracold atomic gases",  
*Int. Rev. Phys. Chem.* 26, 1-28 (2007). (61 citations)
260. J. M. Hutson and P. Soldán,  
"Molecule formation in ultracold atomic gases",  
*Int. Rev. Phys. Chem.* 25, 497-526 (2006). (99 citations)
259. 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).
258. J. M. Hutson,  
"Coupled channel methods for solving the bound-state Schrödinger equation",  
*Computer Physics Communications* 84, 1-18 (1994). (110 citations)
257. 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)
256. 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).
255. J. M. Hutson,  
"Intermolecular forces from the spectroscopy of Van der Waals complexes",  
*Annual Review of Physical Chemistry* 41, 123-154 (1990). (269 citations)
254. 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

253. B. Mukherjee, M. D. Frye and J. M. Hutson,  
"Feshbach resonances and molecule formation in ultracold mixtures of Rb and Yb(<sup>3</sup>P) atoms",  
accepted for *Phys. Rev. A* January 2022; available from arXiv:2110.15906, (2021).
252. Z. Guo, F. Jia, B. Zhu, L. Li, J. M. Hutson and D. Wang,  
"Tunable Feshbach resonances and interaction potentials between <sup>23</sup>Na and <sup>87</sup>Rb atoms",  
accepted for *Phys. Rev. A* January 2022; available from arXiv:2108.01856, (2021).
251. M. D. Frye and J. M. Hutson,  
"Complexes formed in collisions between ultracold alkali-metal diatomic molecules and atoms",  
*New J. Phys.* 23, 125008 (2021).
250. P. D. Gregory, J. A. Blackmore, M. D. Frye, L. M. Fernley, S. L. Bromley, J. M. Hutson and  
S. L. Cornish,  
"Molecule-molecule and atom-molecule collisions with ultracold RbCs molecules",  
*New J. Phys.* 23, 125004 (2021).
249. X.-Y. Wang, M. D. Frye, S. Zhen, J. Cao, L. Lan, D.-C. Zhang, H. Yang, J. M. Hutson, B. Zhao,  
C.-L. Bai and J.-W. Pan,  
"Magnetic Feshbach resonances in collisions of <sup>23</sup>Na<sup>40</sup>K with <sup>40</sup>K",  
*New J. Phys.* 23, 115010 (2021).
248. Z. Guo, F. Jia, L. Li, Y. Ma, J. M. Hutson, X. Cui, and D. Wang,  
"Lee-Huang-Yang effects in the ultracold mixture of <sup>23</sup>Na and <sup>87</sup>Rb with attractive interspecies

- interactions”,  
Phys. Rev. Res. 3, 033247 (2021).
247. S. Jurgilas, A. Chakraborty, C. J. H. Rich, L. Caldwell, B. E. Sauer, M. D. Frye, J. M. Hutson and M. R. Tarbutt,  
“Collisions in a dual-species magneto-optical trap of molecules and atoms”,  
New J. Phys. 23, 075004 (2021).
246. R. V. Brooks, S. Spence, A. Guttridge, A. Alampounti, A. Rakonjac, L. A. McArd, J. M. Hutson and S. L. Cornish,  
“Preparation of one  $^{87}\text{Rb}$  and one  $^{133}\text{Cs}$  atom in a single optical tweezer”,  
New J. Phys. 23, 065002 (2021).
245. P. D. Gregory, J. A. Blackmore, S. L. Bromley, J. M. Hutson and S. L. Cornish,  
“Robust storage qubits in ultracold polar molecules”,  
Nature Physics 17, 11491153 (2021).
244. S. Jurgilas, A. Chakraborty, C. J. H. Rich, L. Caldwell, H. J. Williams, N. J. Fitch, B. E. Sauer, M. D. Frye, J. M. Hutson and M. R. Tarbutt,  
“Collisions between ultracold molecules and atoms in a magnetic trap”,  
Phys. Rev. Lett. 126, 153401 (2021).  
Paper selected as an *Editors' Suggestion*  
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243. Y. Yu, K. Wang, J. D. Hood, L. Picard, J. T. Zhang, W. B. Cairncross, J. M. Hutson, T. Rosenband and K.-K. Ni,  
“Coherent optical creation of a single molecule”,  
Phys. Rev. X 11, 031061 (2021).
242. X. Xie, M. J. Van de Graaff, R. Chapurin, M. D. Frye, J. M. Hutson, J. P. D’Incao, P. S. Julienne, J. Ye and E. A. Cornell,  
“Observation of Efimov universality across a non-universal Feshbach resonance in  $^{39}\text{K}$ ”,  
Phys. Rev. Lett. 125, 243401 (2020).
241. J. A. Blackmore, R. Sawant, P. D. Gregory, S. L. Bromley, J. Aldegunde, J. M. Hutson and S. L. Cornish,  
“Controlling the ac Stark effect of RbCs with dc electric and magnetic fields”,  
Phys. Rev. A 102, 053316 (2020).  
Paper selected as an *Editors' Suggestion*
240. M. D. Frye, S. L. Cornish and J. M. Hutson,  
“Prospects of forming high-spin polar molecules from ultracold atoms”,  
Phys. Rev. X 10, 041005 (2020).
239. 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”,  
Phys. Rev. Res. 2, 033163 (2020).
238. J. T. Zhang, Y. Yu, W. B. Cairncross, K. Wang, L. Picard, J. D. Hood, Y.-W. Lin, J. M. Hutson and K.-K. Ni,  
“Forming a single molecule by magnetoassociation in an optical tweezer”,  
Phys. Rev. Lett. 124, 253401 (2020).
237. 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”,  
Phys. Chem. Chem. Phys. 22, 13002-13007 (2020).
236. 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”,  
Phys. Rev. A 101, 062308 (2020).
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", *J. Phys.: Conf. Ser.* 1412, 062005 (2020).
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).  
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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”,  
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219. A. Guttridge, S. A. Hopkins, M. D. Frye, J. J. McFerran, J. M. Hutson and S. L. Cornish,  
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218. J. Aldegunde and J. M. Hutson,  
“Hyperfine structure of  $^2\Sigma$  molecules containing alkaline-earth-metal atoms”,  
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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”,  
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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”,  
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211. M. Gröbner, P. Weinmann, E. Kirilov, H.-C. Nägerl, P. S. Julienne, C. R. Le Sueur and  
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“Observation of interspecies Feshbach resonances in an ultracold  $^{39}\text{K}-^{133}\text{Cs}$  mixture and  
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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,  
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physics”,  
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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”,  
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207. D. J. Owens, T. Xie and J. M. Hutson,  
“Creating Feshbach resonances for ultracold molecule formation with radiofrequency fields”,  
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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,  
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204. D. G. Green, C. L. Vaillant, M. D. Frye, M. Morita and J. M. Hutson, "Quantum chaos in ultracold collisions between Yb( $^1S_0$ ) and Yb( $^3P_2$ )", 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  $^{87}\text{Rb}^{133}\text{Cs}$  molecules in the rovibrational ground state", Phys. Rev. Lett. 113, 255301/1-5 (2014). (169 citations)
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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).
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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).
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189. M. L. González-Martínez and J. M. Hutson,  
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188. D. A. Brue and J. M. Hutson,  
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