

Publications PD Dr. Holger Kreckel

[76] F. Grussie, L. Berger, M. Grieser, Á. Kálosi, D. Müll, O. Novotný, A. Znotins, F. Dayou, X. Urbain, and H. Kreckel,

"Merged beams study of the reaction of cold HD⁺ with C atoms reveals pronounced intramolecular kinetic isotope effect",

Phys. Rev. Lett, accepted.

[75] Á. Kálosi, L. Gamer, M. Grieser, R. von Hahn, L.W. Isberner, Julia I. Jäger, H. Kreckel, D.A. Neufeld, D. Paul, D.W. Savin, S. Schippers, V.C. Schmidt, A. Wolf, M.G. Wolfire, and O. Novotný, "Dissociative Recombination of Rotationally Cold OH⁺ and Its Implications for the Cosmic Ray Ionization Rate in Diffuse Clouds", Astrophys. J. Lett. 955: L26 (2023), <https://doi.org/10.3847/2041-8213/acf71d>

[74] Y. Ben-Shabo, A. Kurbanov, C.D. Schröter, R. Moshammer, H. Kreckel, Y. Toker, "Velocity Map Imaging with No Spherical Aberrations",

Phys. Chem. Chem. Phys. 25, 25122-25129 (2023),

<https://doi.org/10.1039/D3CP03693F>

[73] J. Le Bourlot, E. Roueff, F. Le Petit, F. Kehrein, A. Oetjens, and H. Kreckel, "Understanding the temperatures of H₃⁺ and H₂ in diffuse interstellar sightlines", Molecular Physics, e2182612 (2023), <https://doi.org/10.1080/00268976.2023.2182612>

[72] D. Paul, M. Grieser, F. Grussie, R. von Hahn, L. W. Isberner, Á. Kálosi, C. Krantz, H. Kreckel, D. Müll, D.A. Neufeld, D.W. Savin, S. Schippers, P. Wilhelm, A. Wolf, M.G. Wolfire, and O. Novotný, "Experimental determination of the dissociative recombination rate coefficient for rotationally cold CH⁺ and its implications for diffuse cloud chemistry", Astrophys. J. 939 122 (2022), <https://doi.org/10.3847/1538-4357/ac8e02>

[71] M. Grieser, V. C. Schmidt, K. Blaum, F. Grussie, R. von Hahn, Á. Kálosi, H. Kreckel, D. Müll, O. Novotný, F. Nuesslein and Andreas Wolf, "Isochronous mass spectrometry in an electrostatic storage ring", Rev. Sci. Instrum. 93, 063302 (2022), <https://doi.org/10.1063/5.0090131>

[70] Á. Kálosi, M. Grieser, R. von Hahn, U. Hechtfischer, C. Krantz, H. Kreckel, D. Müll, D. Paul, D. W. Savin, P. Wilhelm, A. Wolf, and O. Novotný, "Laser Probing of the Rotational Cooling of Molecular Ions by Electron Collisions", Phys. Rev. Lett. 128, 183402 (2022), <https://doi.org/10.1103/PhysRevLett.128.183402>

Featured in Physics: <https://physics.aps.org/articles/v15/s58>

[69] F. Grussie, A. P. O'Connor, M. Grieser, D. Müll, A. Znotins, X. Urbain, and H. Kreckel, "An ion-atom merged beams setup at the Cryogenic Storage Ring", Rev. Sci. Instrum. 93, 053305 (2022), <https://doi.org/10.1063/5.0086391>

Featured article, see AIP Scilight: <https://doi.org/10.1063/10.0011593>

- [68] A. Znotins, F. Grussie, A. Wolf, X. Urbain, H. Kreckel,
"An approach for multi-color action spectroscopy of highly excited states of H_3^+ ",
J. Mol. Spectr. 378, 111476 (2021),
<https://doi.org/10.1016/j.jms.2021.111476>
- [67] D. Müll, F. Grussie, K. Blaum, S. George, J. Göck, M. Grieser, R. von Hahn, Z. Harman, Á. Kálosi, C. H. Keitel, C. Krantz, C. Lyu, O. Novotný, F. Nuesslein, D. Paul, V. C. Schmidt, S. Singh, S. Sunil Kumar, X. Urbain, A. Wolf, and H. Kreckel,
"Metastable states of Si^- observed in a cryogenic storage ring",
Phys. Rev. A 104, 032811 (2021),
<https://link.aps.org/doi/10.1103/PhysRevA.104.032811>
- [66] O. Novotný, P. Wilhelm, D., Á. Kálosi, S. Saurabh, A. Becker, K. Blaum, S. George, J. Göck, M. Grieser, F. Grussie, R. von Hahn, C. Krantz, H. Kreckel, C. Meyer, P. M. Mishra, D. Muell, F. Nuesslein, D. A. Orlov, M. Rimmier, V. C. Schmidt, A. Shornikov, A. S. Terekhov, S. Vogel, D. Zajfman, A. Wolf,
"Quantum-state-selective electron recombination studies suggest enhanced abundance of primordial HeH^+ ",
Science 365, 676–679 (2019),
<https://science.sciencemag.org/content/365/6454/676>
- [65] H. Kreckel, O. Novotný and A. Wolf,
"Astrochemical studies at the Cryogenic Storage Ring",
Phil. Trans. R. Soc. A 377, 20180412 (2019),
<http://dx.doi.org/10.1098/rsta.2018.0412>
- [64] Sunil S. Kumar, Florian Grussie, Yury V. Suleimanov, Hua Guo and Holger Kreckel
"Low temperature rates for key steps of interstellar gas-phase water formation"
Science Advances 4: eaar3417 (2018),
<doi: 10.1126/sciadv.aar3417>
- [63] C. Meyer, A. Becker, K. Blaum, C. Breitenfeldt, S. George, J. Göck, M. Grieser, F. Grussie, E. A. Guerin, R. von Hahn, P. Herwig, C. Krantz, H. Kreckel, J. Lion, S. Lohmann, P. M. Mishra, O. Novotný, A. P. O'Connor, R. Repnow, S. Saurabh, D. Schwalm, L. Schweikhard, K. Spruck, S. Sunil Kumar, S. Vogel, and A. Wolf,
"Radiative Rotational Lifetimes and State-Resolved Relative Detachment Cross Sections from Photodetachment Thermometry of Molecular Anions in a Cryogenic Storage Ring",
Phys. Rev. Lett. 119, 02320 (2017),
<https://doi.org/10.1103/PhysRevLett.119.023202>
Highlighted in: Physics Focus "[The Coolest Molecular Ion Beams](#)"
- [62] R. von Hahn, A. Becker, F. Berg, K. Blaum, C. Breitenfeldt, H. Fadil, F. Fellenberger, M. Froese, S. George, J. Göck, M. Grieser, F. Grussie, E. A. Guerin, O. Heber, P. Herwig, J. Karthein, C. Krantz, H. Kreckel, M. Lange, F. Laux, S. Lohmann, S. Menk, C. Meyer, P. M. Mishra, O. Novotný, A. P. O'Connor, D. A. Orlov, M. L. Rappaport, R. Repnow, S. Saurabh, S. Schippers, C. D. Schröter, D. Schwalm, L. Schweikhard, T. Sieber, A. Shornikov, K. Spruck, S. Sunil Kumar, J. Ullrich, X. Urbain, S. Vogel, P. Wilhelm, A. Wolf, and D. Zajfman,
"The Cryogenic Storage Ring CSR",
Rev. Sci. Instrum. 87, 063115 (2016),
<dx.doi.org/10.1063/1.4953888>

- [61]** A. P. O'Connor, A. Becker, K. Blaum, C. Breitenfeldt, S. George, J. Göck, M. Grieser, F. Grussie, E. A. Guerin, R. von Hahn, U. Hechtfischer, P. Herwig, J. Karthein, C. Krantz, H. Kreckel, S. Lohmann, C. Meyer, P. M. Mishra, O. Novotný, R. Repnow, S. Saurabh, D. Schwalm, K. Spruck, S. Sunil Kumar, S. Vogel, and A. Wolf,
"Photodissociation of an Internally Cold Beam of CH⁺ Ions in a Cryogenic Storage Ring",
Phys. Rev. Lett. 116, 113002 (2016),
<http://dx.doi.org/10.1103/PhysRevLett.116.113002>
- [60]** A. P. O'Connor, F. Grussie, H. Bruhns, N. de Ruette, T. P. Koenning, K. A. Miller, D. W. Savin, J. Stützel, X. Urbain and H. Kreckel,
"Generation of neutral atomic beams utilizing photodetachment by high power diode laser stacks",
Rev. Sci. Instrum. 86, 113306 (2015),
[dx.doi.org/10.1063/1.4934873](https://doi.org/10.1063/1.4934873)
- [59]** H. Kreckel and D. Savin,
"Negative Ion Chemistry in the Early Universe",
in Laboratory Astrochemistry: from molecules through nanoparticles through grains, eds. Schlemmer, Giesen, Mutschke, Jäger, Wiley-VCH 2015
- [58]** H. Kreckel, H. Bruhns, M. Cizek, S.C.O. Glover, K.A. Miller, X. Urbain, D.W. Savin,
"Experimental results for H₂ formation from H⁻ and H and implications from first star formation",
AIP Conf. Proc. 1642, 388 (2015),
<https://doi.org/10.1063/1.4906701>
- [57]** K.N. Crabtree, N. Indriolo, H. Kreckel, B.J. McCall,
The ortho:para ratio of H₃⁺ in laboratory and astrophysical plasmas,
AIP Conf. Proc. 1642, 380 (2015),
<https://doi.org/10.1063/1.4906699>
- [56]** P. Herwig, K. Zawatzky, M. Grieser, O. Heber, B. Jordon-Thaden, C. Krantz, O. Novotný, R. Repnow, V. Schurig, D. Schwalm, Z. Vager, A. Wolf, O. Trapp, H. Kreckel,
"Absolute configuration assignment of a chiral molecule in the gas phase using foil-induced Coulomb-explosion imaging",
Phys. Rev. A 90, 052503 (2014),
<https://journals.aps.org/prl/abstract/10.1103/PhysRevA.90.052503>
- [55]** T. Albertsson, N. Indriolo, H. Kreckel, D. Semenov, K.N. Crabtree, Th. Henning,
"First Time-Dependent Study of H₂ and H₃⁺ Ortho-Para Chemistry in the Diffuse Interstellar Medium",
Astrophys. J. 787, 44 (2014),
<https://iopscience.iop.org/article/10.1088/0004-637X/787/1/44/meta>
- [54]** K. Zawatzky, P. Herwig, M. Grieser, O. Heber, B. Jordon-Thaden, C. Krantz, O. Novotný, R. Repnow, V. Schurig, D. Schwalm, Z. Vager, A. Wolf, H. Kreckel, O. Trapp,
"Coulomb Explosion Imaged Chiral (R,R)-2,3-Dideuteroxirane: Unambiguous Access to the Absolute Configuration of (+)-Glyceraldehyde",
Chem. Eur. J. 20, 5555 (2014),
<https://doi.org/10.1002/chem.201400296>
- [53]** H. Kreckel, P. Herwig, D. Schwalm, M. Čížek, R. Golser, O. Heber, B. Jordon-Thaden, A. Wolf,
"Metastable states of diatomic hydrogen anions",
J. Phys.: Conf. Ser. 488, 012034 (2014),
<https://iopscience.iop.org/article/10.1088/1742-6596/488/1/012034>

[52] P. Herwig, K. Zawatzky, M. Grieser, O. Heber, B. Jordon-Thaden, C. Krantz, O. Novotný, R. Repnow, V. Schurig, D. Schwalm, Z. Vager, A. Wolf, O. Trapp, H. Kreckel,
"Imaging the absolute configuration of a chiral epoxide in the gas phase",
Science 342, 1084 (2013),
<https://www.science.org/doi/10.1126/science.1246549>

Highlighted in: IdW Informationsdienst Wissenschaft: [The search for a Molecular Mirror Image](#)
Press release Max-Planck-Gesellschaft: ["Schnapschüsse unterscheiden Moleküle von ihrem Spiegelbild"](#)

Press release Heidelberg University: "[The Search for a Molecular Mirror Image](#)"

[51] O. Novotný, A. Becker, H. Buhr, C. Domesle, W. Geppert, M. Grieser, C. Krantz, H. Kreckel, R. Repnow, D. Schwalm, K. Spruck, J. Stützel, B. Yang, A. Wolf, D. W. Savin,
"Dissociative recombination measurements of HCl^+ using an ion storage ring",
Astrophys. J. 777, 54 (2013)
[DOI 10.1088/0004-637X/777/1/54](https://doi.org/10.1088/0004-637X/777/1/54)

[50] P. Herwig, D. Schwalm, M. Čížek, R. Golser, M. Grieser, O. Heber, R. Repnow, A. Wolf, and H. Kreckel,
"Metastable states of D_2^- observed by foil-induced Coulomb explosion imaging",
Phys. Rev. A 87, 062513 (2013),
<https://journals.aps.org/prl/abstract/10.1103/PhysRevA.87.062513>

[49] K.A. Miller, H. Bruhns, M. Čížek, J. Eliášek, R. Cabrera-Trujillo, H. Kreckel, A.P. O'Connor, X. Urbain, D.W. Savin,
"Isotope effect for associative detachment: $\text{H}(\text{D})^- + \text{H}(\text{D}) \rightarrow \text{H}_2(\text{D}_2) + \text{e}^-$ ",
Phys. Rev. A 86, 032714 (2012),
<https://journals.aps.org/prl/abstract/10.1103/PhysRevA.86.032714>

[48] F. Grussie, M.H. Berg, K.N. Crabtree, S. Gaertner, B.J. McCall, S. Schlemmer, A. Wolf, H. Kreckel,
"The Low-Temperature Nuclear Spin Equilibrium of H_3^+ in Collisions with H_2^- ",
Astrophys. J. 759, 21 (2012)
<https://iopscience.iop.org/article/10.1088/0004-637X/759/1/21/meta>

[47] H. Kreckel, A. Petrignani, O. Novotny, K. Crabtree, H. Buhr, B.J. McCall, A. Wolf,
"Storage ring measurements of the dissociative recombination of H_3^+ ",
Phil. Trans. R. Soc. A 370, 5088 (2012)
<https://royalsocietypublishing.org/doi/10.1098/rsta.2012.0019>

[46] A.A. Mills, B.M. Siller, M.W. Porambo, M. Perera, H. Kreckel, and B.J. McCall,
"Ultra-sensitive high-precision spectroscopy of a fast molecular ion beam",
J. Chem. Phys. 135, 224201 (2011).
<https://doi.org/10.1063/1.3665925>

[45] B. Jordon-Thaden, H. Kreckel, R. Golser (and 16 co-authors),
"Structure and stability of the negative hydrogen molecular ion",
Phys. Rev. Lett. 107, 193003 (2011).
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.107.193003>
featured in: Physics Today 64 (12), 23 (2011), ["Negative ions of molecular hydrogen"](#)
APS Physics, ["The simplest Molecular Anion"](#).

[44] K. A. Miller, H. Bruhns, J. Eliasek, M. Cizek, H. Kreckel, X. Urbain, and D. W. Savin,
"Associative detachment of $H^- + H \rightarrow H_2 + e^-$ ",
Phys. Rev. A. 84, 052709 (2011).

<https://journals.aps.org/prab/abstract/10.1103/PhysRevA.84.052709>

[43] D. Schwalm, D. Shafir, S. Novotny, H. Buhr, S. Altevogt, A. Faure, M. Grieser, A.G. Harvey, O. Heber, J. Hoffmann, H. Kreckel, (and 10 coauthors),
"Rotational Cooling of HD^+ by Superelastic Collisions with Electrons",
J. Phys.: Conf. Ser. 300, 012006 (2011).

<https://iopscience.iop.org/article/10.1088/1742-6596/300/1/012006>

[42] A. Petrignani, S. Altevogt, M.H. Berg, D. Bing, M. Grieser, J. Hoffmann, B. Jordon-Thaden, C. Krantz, M.B. Mendes, O. Novotný, S. Novotny, D.A. Orlov, R. Repnow, T. Sorg, J. Stützel, A. Wolf, H. Buhr, H. Kreckel, V. Kokouoline, and C.H. Greene,
"Resonant structure of low-energy H_3^+ dissociative recombination",
Phys. Rev. A 83, 032711 (2011).

<https://journals.aps.org/prab/abstract/10.1103/PhysRevA.83.032711>

[41] K.N. Crabtree, N. Indriolo, H. Kreckel, B.A. Tom, B.J. McCall,
"On the ortho:para ratio of H_3^+ in diffuse molecular clouds",
Astrophys. J. 729, 15 (2011).

<https://iopscience.iop.org/article/10.1088/0004-637X/729/1/15/meta>

[40] H. Kreckel, O. Novotny, K.N. Crabtree, H. Buhr, A. Petrignani, B.A. Tom, (and 12 coauthors),
"High-resolution storage-ring measurements of the dissociative recombination of H_3^+ using a
supersonic expansion ion source",
Phys. Rev. A 82, 042715 (2010).

<https://journals.aps.org/prab/abstract/10.1103/PhysRevA.82.042715>

[39] H. Kreckel, H. Bruhns, M. Cizek, S.C.O. Glover, K.A. Miller, X. Urbain, and D.W. Savin,
"Experimental results for H_2 formation from H^- and H and implications for first star formation",
proceedings SMILES workshop, Kos, Greece, 2010.

[38] H. Bruhns, H. Kreckel, K.A. Miller, X. Urbain, and D.W. Savin,
"Absolute measurement of the $H^- + H \rightarrow H_2 + e^-$ associative detachment reaction using a merged
beams apparatus",
Phys. Rev. A, 82, 042708 (2010).

<https://journals.aps.org/prab/abstract/10.1103/PhysRevA.82.042708>

[37] H. Kreckel, H. Bruhns, M. Cizek, S.C.O. Glover, K. A. Miller, X. Urbain, and D.W. Savin,
"Experimental results for H_2 formation from H^- and H and implications for first star formation",
Science 329, 69 (2010),

<https://www.science.org/doi/full/10.1126/science.1187191>

featured in: Science (perspectives), "To cool or not to cool", Science 329, 45 (2010).

[36] H. Kreckel, H. Bruhns, K. A. Miller, E. Wahlin, A. Davis, S. Hoeckh, and D. W. Savin,
"A simple double-focusing electrostatic ion beam deflector",
Rev. Sci. Instrum. 81, 063304 (2010).

<https://doi.org/10.1063/1.3433485>

[35] H. Bruhns, H. Kreckel, K. Miller, M. Lestinsky, B. Seredyuk, W. Mitthumsiri, B.L. Schmitt, M. Schnell, X. Urbain, M.L. Rappaport, C.C. Havener, and D.W. Savin,
"A novel merged beams apparatus to study anion-neutral reaction",
Rev. Sci. Instrum. 81, 013112 (2010).
<https://doi.org/10.1063/1.3280227>

[34] D.W. Savin H. Bruhns, S.C.O. Glover, H. Kreckel, M. Cizek, K. A. Miller, and X. Urbain,
"Laboratory simulations of molecular hydrogen formation in the early universe: a progress report",
First Stars and Galaxies workshop, Austin TX, 2010, First Stars and Galaxies workshop, AIP Conference Proceedings 1294, 62 (2010).
<https://doi.org/10.1063/1.3518892>

[33] D. Shafir, S. Novotny, H. Buhr, S. Altevogt, A. Faure, M. Grieser, A. G. Harvey, O. Heber, J. Hoffmann, H. Kreckel, (and 9 coauthors),
"Rotational cooling of HD⁺ molecular ions by superelastic collisions with electrons",
Phys. Rev. Lett. 102, 223202 (2009).
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.102.223202>

[32] P. Bryans, H. Kreckel, E. Roueff, V. Wakelam, and D.W. Savin,
"Molecular cloud chemistry and the importance of dielectronic recombination",
Astrophys. J. 694, 286 (2009).
<https://iopscience.iop.org/article/10.1088/0004-637X/694/1/286>

[31] H. Buhr, H.B. Pedersen, S. Altevogt, V.M. Andrianarijaona, H. Kreckel, (and 13 coauthors),
"Electron collisions with ⁴He₂⁺ at the TSR",
J. Phys.: Conf. Ser. 192, 012013 (2009).
<https://iopscience.iop.org/article/10.1088/1742-6596/192/1/012013>

[30] A. Petrignani, H. Kreckel, (and 15 coauthors),
"Spectroscopy and dissociative recombination of the lowest rotational states of H₃⁺",
J. Phys.: Conf. Ser. 192, 012022 (2009).
<https://iopscience.iop.org/article/10.1088/1742-6596/192/1/012022>

[29] H. Kreckel, D. Bing, S. Reinhardt, A. Petrignani, M. Berg, A. Wolf,
"Chemical probing spectroscopy of H₃⁺ above the barrier to linearity",
J. Chem. Phys. 129, 164312 (2008),
<https://doi.org/10.1063/1.2994730>

selected for Online Publication in Ultrafast Science, November 2008.

[28] H. Bruhns, H. Kreckel, D. W. Savin, D. G. Seely, and C. C. Havener,
"Low-energy charge transfer for collisions of Si³⁺ with atomic hydrogen",
Phys. Rev. A 77, 064702 (2008).
<https://journals.aps.org/prabSTRACT/10.1103/PhysRevA.77.064702>

[27] H. Buhr, H. B. Pedersen, S. Altevogt, V. M. Andrianarijaona, H. Kreckel, (and 13 coauthors),
"Inelastic electron collisions of the isotopically symmetric helium dimer ⁴He₂⁺ in a storage ring",
Phys. Rev. A 77, 032719 (2008).
<https://journals.aps.org/prabSTRACT/10.1103/PhysRevA.77.032719>

[26] H. Kreckel, A. Petrignani, M. Berg, D. Bing, S. Reinhardt, (and 19 coauthors),
"Electron collisions and rovibrational action spectroscopy of cold H₃⁺ molecules",
J. Phys.: Conf. Ser. 88, 012064 (2007).
<https://iopscience.iop.org/article/10.1088/1742-6596/88/1/012064>

[25] I. Nevo, S. Novotny, H. Buhr, V. Andrianarijaona, S. Altevogt, O. Heber, J. Hoffmann, H. Kreckel, L. Lammich, M. Lestinsky, H.B. Pedersen, D. Schwalm, A. Wolf, D. Zajfman,
"Three-body kinematical correlation in the dissociative recombination of CH_2^+ by three-dimensional imaging",
Phys. Rev. A 76, 022713 (2007).

<https://journals.aps.org/prabSTRACT/10.1103/PhysRevA.76.022713>

[24] L. Lammich, S. Altevogt, H. Buhr, H. Kreckel (and 11 coauthors),
"Electron-impact dissociation and transient properties of a stored LiH_2^- beam",
Eur. Phys. Journal D 41, 103 (2007).

<https://link.springer.com/article/10.1140/epjd/e2006-00200-6>

[23] J. Glosik, P. Hlavenka, R. Plasil, F. Windisch, D. Gerlich, A. Wolf, and H. Kreckel,
"Action spectroscopy of H_3^+ and D_2H^+ using overtone excitation",
Phil. Trans. Roy. Soc. London 364, 2981 (2006).

<https://royalsocietypublishing.org/doi/10.1098/rsta.2006.1866>

[22] A. Wolf, H. Kreckel M. Motsch, J. Mikosch, (and 20 coauthors),
"Effects of molecular rotation in low-energy electron collisions of H_3^+ ",
Phil. Trans. Roy. Soc. A 364, 2931 (2006).

<https://royalsocietypublishing.org/doi/10.1098/rsta.2006.1881>

[21] R. Garcia-Molina, I. Abril, S. Heredia-Avalos, L. Lammich, H. Buhr, H. Kreckel, S. Krohn, D. Strasser, R. Wester, A. Wolf, D. Zajfman, and D. Schwalm,
"Wake effects in the evolution of fast molecular ions through thin foil",
Nucl. Instr. Meth. B 230, 41 (2005).

<https://www.sciencedirect.com/science/article/pii/S0168583X04012790>

[20] H. B. Pedersen, H. Buhr, S. Altevogt, V. Andrianarijaona, H. Kreckel, (and 8 coauthors),
"Dissociative recombination and low-energy inelastic electron collisions of the helium dimer ion",
Phys. Rev. A 72, 012712 (2005).

<https://journals.aps.org/prabSTRACT/10.1103/PhysRevA.72.012712>

[19] H.B. Pedersen, H. Buhr, S. Altevogt, V. Andrianarijaona, H. Kreckel, (and 8 coauthors),
"Storage ring studies on dissociative recombination and internal excitation of helium dimer ions",
J. Phys.: Conf. Ser. 4, 168 (2005).

<https://iopscience.iop.org/article/10.1088/1742-6596/4/1/023/meta>

[18] H. Kreckel, J. Mikosch, R. Wester, J. Glosik, R. Plasil, M. Motsch, D. Gerlich, D. Schwalm, D. Zajfman, and A. Wolf,
"Towards state selective measurements of the H_3^+ dissociative recombination rate coefficient",
J. Phys.: Conf. Ser. 4, 126 (2005).

<https://iopscience.iop.org/article/10.1088/1742-6596/4/1/017/meta>

[17] L. Lammich, D. Strasser, H. Kreckel, S. Altevogt, V. Andrianarijaona, H. Buhr, M. Lange, H.B. Pedersen, D. Schwalm, A. Wolf, and D. Zajfman,
"DR rate coefficient measurements using stored beams of H_3^+ and its isotopomers",
J. Phys.: Conf. Ser. 4, 98 (2005).

<https://iopscience.iop.org/article/10.1088/1742-6596/4/1/013/meta>

[16] H. Kreckel, M. Motsch, J. Mikosch, J. Glosik, (and 18 coauthors),
"High resolution dissociative recombination of cold H_3^+ and first evidence for nuclear spin effects",
Phys. Rev. Lett. 95, 263201 (2005),
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.95.263201>
featured in: Nature (News and Views), [Nature 440, 157 \(2005\)](#).

[15] A. Wolf, S. Krohn, H. Kreckel, L. Lammich, M. Lange, D. Strasser, M. Grieser, D. Schwalm, and D. Zajfman,
"Cooling of molecular ion beams",
Nucl. Instr. Meth. A 532, 69 (2004).
<https://www.sciencedirect.com/science/article/pii/S0168900204011659>

[14] D. Strasser, L. Lammich, H. Kreckel, M. Lange, S. Krohn, D. Schwalm, A. Wolf, and D. Zajfman,
"Breakup dynamics and isotope effects in D_2H^+ and H_2D^+ dissociative recombination",
Phys. Rev. A 69, 064702 (2004).
<https://journals.aps.org/pra/abstract/10.1103/PhysRevA.69.064702>

[13] L. Lammich, H. Buhr, H. Kreckel, (and 11 coauthors),
"Coulomb explosion imaging of CH_2^+ : target polarization effects and bond angle distribution",
Phys. Rev. A 69, 062904 (2004).
<https://journals.aps.org/pra/abstract/10.1103/PhysRevA.69.062904>

[12] A. Wolf, L. Lammich, D. Strasser, S. Altevogt, V. Andrianarijaona, H. Buhr, O. Heber, H. Kreckel, H. Pedersen, D. Schwalm, and D. Zajfman,
"Storage ring experiments with cold molecular ions: the H_3^+ puzzle",
Phys. Scripta T110, 193 (2004).
<https://iopscience.iop.org/article/10.1238/Physica.Topical.110a00193>

[11] H. Kreckel, J. Tennyson, D. Schwalm, D. Zajfman and A. Wolf,
"Rovibrational relaxation model for H_3^{++} ",
New J. Phys. 6, 151 (2004).
<https://iopscience.iop.org/article/10.1088/1367-2630/6/1/151>

[10] J. Mikosch, H. Kreckel, R. Wester, R. Plasil, J. Glosik, D. Gerlich, D. Schwalm, and A. Wolf,
"Action spectroscopy and temperature diagnostics of H_3^+ by chemical probing",
J. Chem. Phys. 121, 11030 (2004).
<https://doi.org/10.1063/1.1810512>

[9] D. Zajfman, S. Krohn, M. Lange, H. Kreckel, L. Lammich, D. Strasser, D. Schwalm, X. Urbain, and A. Wolf,
"Physics with molecular ions in storage rings",
Nucl. Inst. Meth. B 205, 360 (2003).
<https://www.sciencedirect.com/science/article/pii/S0168583X02019341>

[8] L. Lammich, H. Kreckel, S. Krohn, M. Lange, D. Schwalm, D. Strasser, A. Wolf, and D. Zajfman,
"Breakup dynamics in the dissociative recombination of H_3^+ and its isotopomers",
Rad. Phys. Chem. 68, 175 (2003).
<https://www.sciencedirect.com/science/article/pii/S0969806X03002767>

[7] L. Lammich, D. Strasser, H. Kreckel, (and 10 coauthors),
"Evidence for subthermal rotational populations in stored molecular ions through state-dependent dissociative recombination",
Phys. Rev. Lett. 91, 143201 (2003).

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.91.143201>

[6] D. Strasser, L. Lammich, H. Kreckel, S. Krohn, M. Lange, A. Naaman, D. Schwalm, A. Wolf, and D. Zajfman,
"Breakup dynamics and isotope effect in H_3^+ and D_3^+ dissociative recombination",
Phys. Rev. A 66, 032719 (2002).

<https://journals.aps.org/pra/abstract/10.1103/PhysRevA.66.032719>

[5] H. Kreckel, S. Krohn, L. Lammich, M. Lange, J. Levin, M. Scheffel, D. Schwalm, J. Tennyson, Z. Vager, R. Wester, A. Wolf, and D. Zajfman,
"Vibrational and rotational cooling of H_3^+ ",
Phys. Rev. A 66, 052509 (2002).

<https://journals.aps.org/pra/abstract/10.1103/PhysRevA.66.052509>

[4] D. Strasser, L. Lammich, S. Krohn, M. Lange, H. Kreckel, J. Levin, D. Schwalm, Z. Vager, R. Wester, A. Wolf, and D. Zajfman,
"Two- and three-body kinematical correlation in the dissociative recombination of H_3^{++} ",
Phys. Rev. Lett. 86, 779 (2001).

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.86.779>

[3] S. Krohn, M. Lange, M. Grieser, L. Knoll, H. Kreckel, J. Levin, R. Repnow, D. Schwalm, R. Wester, P. Witte, A. Wolf, and D. Zajfman,
"Rate Coefficients and Final States for the Dissociative Recombination of LiH^+ ",
Phys. Rev. Lett. 86, 4005 (2001).

<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.86.4005>

[2] S. Krohn, Z. Amitay, A. Baer, Z. Vager, D. Zajfman, H. Kreckel, (and 6 coauthors),
"Vibrational population diagnostics for dissociative recombination experiments at the TSR using Coulomb explosion imaging",
in: Dissociative Recombination: Theory, Experiment and Applications IV, ed. by M. Larsson, J.B.A. Mitchell, I.F. Schneider, (World Scientific, Singapore, 2000), p. 277.
<https://www.worldscientific.com/doi/abs/10.1142/9789814527088>

[1] M. Lange, J. Levin, L. Knoll, H. Kreckel, (and 6 coauthors),
"New measurements of the dissociative recombination cross section of HD^+ and the importance of electron beam geometry",
in: Dissociative Recombination: Theory, Experiment and Applications IV, ed. by M. Larsson, J.B.A. Mitchell, I.F. Schneider, (World Scientific, Singapore, 2000), p. 265.
<https://www.worldscientific.com/doi/abs/10.1142/9789814527088>