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Physikalische Institute Köln

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A New Guided Ion Beam Instrument – NOVion: Recent Results

Laboratory experiments concerning the formation and destruction of molecular ions are of great importance for modeling astrophysical and laboratory plasmas. The H_3^+ ion is the dominant ion in any kind of hydrogen plasma, triggering the formation of other molecular ions (in interstellar space as well as in laboratory plasmas). Formation and destruction of HeH^+ ions (they were recently discovered in the planetary NGC 7027) are also significant for helium-hydrogen chemistry in different environments.

In this lecture, details about the newest Guided Ion Beam instrument will be presented, in addition to the technique in general. This instrument is used for investigating low energy collisions of interest for astrophysical and laboratory plasmas. Additionally, recent results on the formation of H_3^+ by collision of H_2^+ and H_2 will be given. First results on the formation of HeH^+ via collision of H_2^+ and H_3^+ with He will be presented. Furthermore, the results on the destruction of HeH^+ in collision with H_2 will be shown.

