A 34: Poster – Atomic Collisions and Ultracold Plasmas

Time: Thursday 17:00–19:00 Location: Tent

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Muonic anti-hydrogen formation three-body reaction — •Renat Sultanov — The University of Texas Permian Basin, Odessa, Texas, USA

A few-body formalism is applied for computation of two different three-charge-particle systems. The first system is a collision of a slow antiproton, $\bar{p}$, with a positronium atom: Ps= (e^+e) - a bound state of an electron and a positron. The second problem is a collision of $\bar{p}$ with a muonic muonium atom, i.e. true muonium - a bound state of two muons one positive and one negative: $\mathrm{Ps}_\mu = (\mu^+\mu^-)$. The total cross section of the following two reactions: $\bar{p} + (e^+e^-) \to \bar{H} + e^-$ and $\bar{p} + (\mu^+\mu^-) \to \bar{H}_\mu + \mu^-$, where $\bar{H} = (\bar{p}e^+)$ is anti-hydrogen and $\bar{H}_\mu = (\bar{p}\mu^+)$ is a muonic anti-hydrogen atom, i.e. a bound state of $\bar{p}$ and μ^+, are computed in the framework of a set of coupled two-component Faddeev-Hahn-type (FH-type) equations. Results for better known low energy μ^- transfer reactions from one hydrogen isotope to another hydrogen isotope in the cycle of muon catalyzed fusion (μCF) are also computed and will be presented.