



SPP 1929 – Seminar

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Universität Ulm (West)

Room 45.2.304

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The superstatistics of trapped ions

Under ideal conditions, the secular motion of ions held in radiofrequency ion traps is expected to be described by thermal (Maxwell-Boltzmann) statistics. However, collisions with neutral particles lead to multiple mechanisms through which this assumption breaks down, with the result that the observed velocity and energy distributions do not follow thermal statistics. In this talk, I demonstrate how the statistical properties of these ions can be modelled using the formalism of superstatistics and apply this to explain the deviations from thermal statistics observed both for an ion interacting with a buffer gas in a hybrid ion-neutral trap and for ensembles of laser-cooled ions heated by collisions with residual background gas.

