SFB/TRR 21 - Seminar
19. März 2009, Ulm

Dr. Alexander Retzker
(Imperial College, London)

Quantum simulations and cooling schemes in trapped ions

In this talk the ion trap research at Imperial will be reviewed. In the first part two quantum simulation schemes for trapped ions using the linear to Zig Zag transition will be presented. The first one uses at the quantum features of this transition and the second quantum simulation scheme uses the classical features of this transition to realize the Kibble Zurek mechanism. In the second part two fast cooling schemes will be explained; the first is a weak coupling robust dark state cooling scheme and the second works in strong coupling and cools faster than the trap frequency.

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Universität Ulm, Raum N25 / 486
Albert-Einstein-Allee 11, 89081 Ulm

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