SFB/TRR 21 - Kolloquium
26. Juni 2009, Stuttgart

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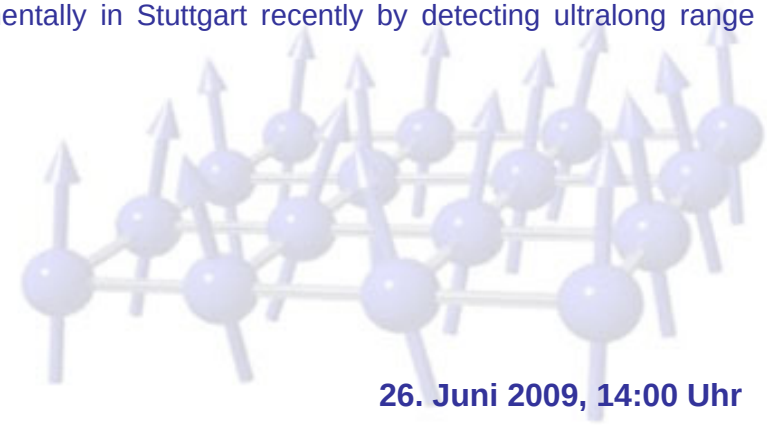
Ultrafast or ultrashort: Extreme atomic dynamics

Present day laser technology opens the way to realize atomic dynamics, never created before in a laboratory. We will discuss two totally different regimes:
Firstly, ultrafast non-equilibrium electron processes in rare gas clusters initiated and probed by intense laser pulses, as available from attosecond and free-electron-laser sources. Secondly, we will turn to ultracold dynamics: In the form of ultracold plasmas this dynamics shares many features with ultrafast processes as discussed before, however, on time and spatial scales which differ by 10 orders of magnitude. Finally, we will discuss the possibility and prospects of Rydberg chemistry in the ultracold which is feasible as has been demonstrated experimentally in Stuttgart recently by detecting ultralong range dimers and trimers.



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