

PHYSIKALISCHES KOLLOQUIUM

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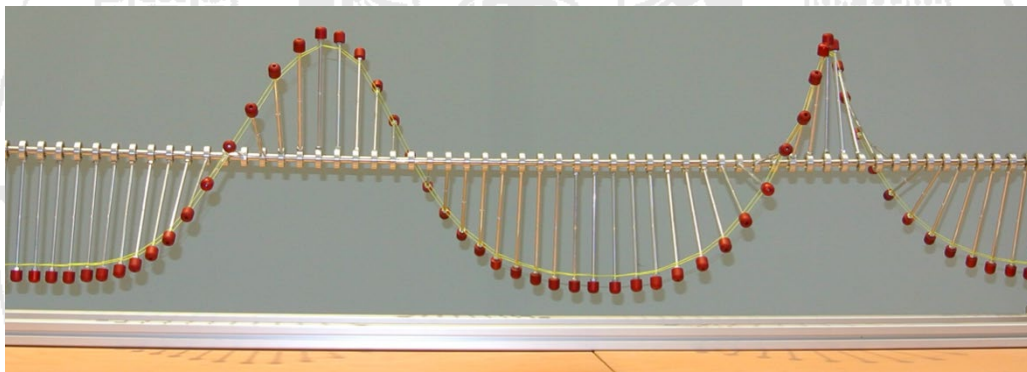
IM GROßEN HÖRSAAL

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A CHAIN OF COUPLED PENDULA AS A MODEL FOR RELATIVISTIC PARTICLE PHYSICS



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A chain of coupled pendula can exhibit a variety of phenomena usually attributed to the realm of relativistic particle physics: stable, particle-like solutions with localized energy (solitons) which can propagate and scatter. One can demonstrate pair-creation and pair-annihilation. But one can also illustrate “relativistic” effects like Lorentz contraction and time dilation. Even though the model for this chain is based on Newtonian physics, it exhibits a Lorentz-invariance, which, however, is not an invariance of space-time but of the dynamics of the solutions. This will lead us to questions like “What about the principle of relativity?”, “Under which conditions can a dynamical invariance become an invariance of space-time?”. (Hopefully) the talk will shed a complementary view onto the fundamental concepts of Special Relativity.

The colloquium will begin with a brief ceremony where Thomas Filk receives the WE-Heraeus senior-professorship from the WE-Heraeus foundation.