

## MP 7: Classical Field Theory

Time: Tuesday 17:45–18:25

Location: H-HS VII

MP 7.1 Tue 17:45 H-HS VII

**Staccato radiation from the decay of large amplitude oscillons**  
— •YAKOV SHNIR — BLTP, JINR, Dubna

We study the decay of large amplitude, almost periodic breather-like states in a deformed sine-Gordon model in one spatial dimension. We discover that these objects decay in a staggered fashion via a series of transitions, during which higher harmonics are released as short, staccato bursts of radiation. Further, we argue that this phenomenon is not restricted to one particular model, and that similar mechanisms of radiative decay of long-lived oscillating states can be observed for a wide class of physical systems, including the  $\phi^6$  model.

MP 7.2 Tue 18:05 H-HS VII

**Real scalar field, non-relativistic limit, and expansion** —  
•LARS HEYEN and STEFAN FLÖRCHINGER — Institut für Theoretische Physik Heidelberg, Heidelberg, Germany

We generalise the existing transformation from a relativistic real scalar to a complex scalar with a Schroedinger-like equation of motion by Namjoo, Guth and Kaiser from a Minkowskian to a more general background metric. Then we apply the transformation to a real scalar on a FLRW background and calculate the effective non-relativistic potential up to second order in small parameters for a  $\phi^4$  interaction in the relativistic theory. The non-trivial background introduces an imaginary term in the effective potential. Further, we show that the transformation can also be interpreted as a Bogoliubov transformation between relativistic and non-relativistic creation and annihilation operators.