Contribution ID: **5**   Type: **Talk**

A Ionization Model

Thursday, 26 May 2022 11:00 (1 hour)

In the first part we will describe the dynamics of a quantum particle coupled to bosonic fields, in the quasi-classical regime. In this case, the fields are very intense and the corresponding degrees of freedom can be treated semiclassically. We prove that in such a regime the effective dynamics for the quantum particles is approximated by

the one generated by a time-dependent point interaction, i.e., a singular time-dependent perturbation of the Laplacian supported in a point. As a by-product, we also show that the unitary dynamics of a time-dependent point interaction can be approximated in strong operator topology by the one generated by time-dependent Schrödinger operators with suitably rescaled regular potentials.Then we analyze the ionization problem for the effective model. First, we prove global well-posedness of the associated Cauchy problem under general assumptions on the potential and on the initial datum. Then, for a monochromatic periodic potential (which also satisfies a suitable no-resonance condition) we investigate the asymptotic behavior of the survival probability of a bound state of the time-independent problem.

Primary author: Dr CARLONE, Raffaele (Università "Federico II"di Napoli)

Co-authors: Dr TENTARELLI, L.; Dr CORREGGI, M.; Dr FALCONI, M.; Dr OLIVIERI, M.; Dr BORRELLI, W.

Presenter: Dr CARLONE, Raffaele (Università "Federico II"di Napoli)

Session Classification: Talk