Contribution ID: **289** Type: **talk**

Quantum Formation of Topological Defects

Monday, 12 July 2021 16:30 (15 minutes)

Quantum field theories generally contain small quantum excitations around a true vacuum that we call particles and large classical structures called solitons that interpolate between different degenerate vacua. Often the solitons have a topological character and are then also known as topological defects of which kinks, domain walls, strings, and magnetic monopoles are all examples. After a quantum phase transition, the quantum vacuum can break up to form these classical topological defects. We study these phase transitions with global symmetry breakings and their dynamics, where the only interactions are with external parameters that induce the phase transition. We evaluate the number densities of the defects in 1,2 and 3-dimensions (kinks, vortices, and monopoles respectively) and find that they scale as $t^{-d/2}$ and evolve towards attractor solutions that are independent of the *externally* controlled time dependence.

Are you are a member of the APS Division of Particles and Fields?

No

Primary authors: Dr ZAHARIADE, George (Institut de Física d'Altes Energies (IFAE), Universitat Autònoma de Barcelona); MUKHOPADHYAY, Mainak (Arizona State University); Prof. VACHASPATI, Tanmay (Arizona State University)

Presenter: MUKHOPADHYAY, Mainak (Arizona State University)

Session Classification: Field and String Theory

Track Classification: Field and String Theory