

## DISCRETE '08: Symposium on Prospects in the Physics of Discrete Symmetries



Contribution ID: 39

Type: **not specified**

### What has CP violation to do with nonlocality?

*Friday 12 December 2008 18:35 (20 minutes)*

I show how basic questions of quantum mechanics can be investigated for systems in high energy physics. In particular the massive kaon-antikaon system is specially suitable as it offers a unique laboratory to test various aspects of particle physics as well as to test the foundations of quantum mechanics (e.g. tests of Bell inequalities, local realistic theories, quantum marking and erasure concepts, decoherence effects, Bohr's complementary principle, ...).

I will show that the nature of these systems provides us with new and novel insights into the peculiarities of the quantum theory which are partly not offered by other quantum systems. In detail I will show how nonlocality and CP violation are connected and how a "kaonic" eraser experiment offers a new option that can only be achieved with neutral kaons. In addition this experiment could be performed at DAPHNE.

**Author:** Dr HIESMAYR, Beatrix (University of Vienna)

**Presenter:** Dr HIESMAYR, Beatrix (University of Vienna)

**Session Classification:** Parallel Session C. Entanglement

**Track Classification:** Entanglement, Symmetrisation Principle