



EINLADUNG

zum

VERA - SEMINAR

von

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**Entanglement and its manifestations
at different energy scales**

In 1935 Erwin Schrödinger gave the name "Verschränkung" (entanglement) to a certain peculiar correlation of quantum systems. Since then the meaning of the word "entanglement" has changed its flavour and despite intensive theoretical investigations and numerous experiments the full picture of entanglement is still missing. Even such simple questions whether a certain quantum state is entangled, i.e. not separable, can in general not be answered. In the first part of the talk I show that also quantum systems other than ordinary matter and light reveal this quantum phenomenon [Hiesmayr, Euro. Phys. J. C 50, 73 (2007)]. In particular I focus on a peculiar relation between certain manifestations of entanglement, i.e. Bell inequalities, and the violation of symmetries in particle physics. In the second part I discuss detection criteria of multipartite entanglement recently found [arXiv:0912.1870: M. Huber, F. Mintert, A. Gabriel, B.C. Hiesmayr].

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