

**SONDERSEMINAR/SPECIAL SEMINAR**  
**LMU/MPQ**

**am:** Friday, May 25, 2012

**Uhrzeit:** 9:30 a.m. s.t.

**spricht:** Dr. Alexander Streltsov  
Institut für Theoretische Physik III  
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**Thema:** Quantum Cost for sending Entanglement

**Ort:** LS Professor Theodor W. Hänsch, Discussion Room H 311

**gez. Prof. T.W. Hänsch**

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**Abstract**

Establishing quantum entanglement between two distant parties is an essential step of many protocols in quantum information processing. One possibility for providing long-distance entanglement is to create an entangled composite state within a lab and then physically send one subsystem to a distant lab. However, is this the "cheapest" way? Here, we investigate the minimal "cost" that is necessary for establishing a certain amount of entanglement between two distant parties. We prove that this cost is intrinsically quantum, and is specified by quantum correlations. Our results provide an optimal protocol for entanglement distribution and show that quantum correlations are the essential resource for this task.