

Plenary Talk

PV VI Wed 9:00 e415

On quantum resource theories — •DAGMAR BRUSS — Institute for Theoretical Physics III, Heinrich-Heine-University Düsseldorf, Germany

In the prospering field of quantum technologies one aims at employing quantum mechanical properties as resources for tasks such as quantum computing, sensing, communication and simulations. In recent years, so-called quantum resource theories have been developed. They

provide an elegant tool for quantifying a quantum resource, and for analysing its conversion properties. An overview of the state of the art is given, and the general structure of a quantum resource theory is exemplified via purity and coherence, including an extension of the latter concept to generalised measurements. A direct connection between the resources of coherence and purity is pointed out, and a hierarchy of fundamental quantum resources is established, answering the quest for the most elementary quantum resource.