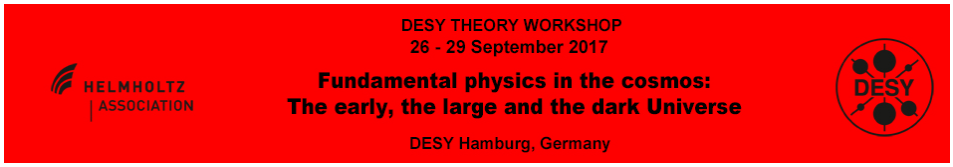

Contribution ID: **3** Type: **not specified**

PROBING OF STRONG INTERACTIONS AND HADRON MATTER WITH CHARMONIUM-LIKE STUDIES

Wednesday 27 September 2017 16:56 (17 minutes)

The spectroscopy of charmonium-like mesons with masses above the DD\bar threshold has been full of surprises, and their nature remains poorly understood [1]. The currently most compelling theoretical descriptions of the mysterious XYZ mesons attributes them to higher lying charmonium states [2], hybrid structure with a tightly bound diquark [3, 4] or a tetraquark [3, 5] core that strongly couples to S-wave D*D*\bar molecule-like structures. In this picture, the production of a XYZ particle in high energy hadron collisions and its decays into light hadron plus charmonum final states proceed via the core component of the meson, while decays to pairs of open charmed mesons proceed via the D*D*\bar component. Until now charmonium-like spectroscopy represents a good testing tool for the theories of strong interactions, including: QCD in both the perturbative and non perturbative regimes, LQCD, potential models and phenomenological models [6 - 8]. The experiments with antiproton-proton annihilation planned at FAIR and proton-proton collisions planned at NICA are well suited for a comprehensive spectroscopy program, in particular, the spectroscopy of charmonium-like exotic states. These states can be produced abundantly in both processes, and their properties can be studied in detail [6 - 8]. This research is of great importance in hadron physics and astrophysics.

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