

2006 APS April Meeting

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Saturday, April 22, 2006 1:30PM - 3:18PM – Session C2 GHP: Hadronic Physics II Hyatt Regency Dallas Landmark B

1:30PM C2.00001 The New Exotic Heavy Mesons¹ ERIC BRAATEN, Ohio State University — Several new hadrons whose constituents include a charm quark and antiquark have recently been discovered, beginning with the X(3872) in 2003. Some of them do not fit naturally into the charmonium spectrum and they are therefore candidates for exotic mesons. The exotic possibilities include hybrid mesons, tetraquark mesons, and mesonic molecules. The large mass of the charm quark provides a handle that can help discriminate between charmonium states and exotic mesons. The remarkable proximity of the mass of the X(3872) to a charm meson threshold provides an additional handle that establishes this state definitively as a charm meson molecule. The interpretation of several of the other exotic candidates remains a mystery.

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2:06PM C2.00002 Strange Quarks in the Nucleon, MARK PITT, Virginia Tech — Strange quarks contribute to the ground state structure of protons and neutrons through their presence in the virtual “sea” of quark – antiquark pairs. This talk will present the current status of the value of the strange quark contributions to scalar, axial-vector, and vector nucleon ground state matrix elements. Particular emphasis will be placed on the vector observables, which are parameterized by the strange electric and magnetic form factors. These quantities are measured experimentally using the technique of parity-violating electron scattering. Several new measurements of this type have been reported in the last two years, and there is consistency among the various measurements. For example, the combined results of five experiments at low four-momentum transfer are consistent with the strange quark sea contributing 10% to the magnetic moment of the proton. This result and the other physics implications of the recent measurements will be discussed.

2:42PM C2.00003 Jet Interactions with Dense Matter at RHIC¹, BERNDT MUELLER, Duke University — The emission of hadrons with high transverse momentum is found to be suppressed in Au+Au collisions at RHIC compared with the emission in proton-proton collisions. This suppression is understood to be a final-state effect caused by the energy loss of energetic precursor partons during their propagation in the hot medium created in the nuclear collisions. The energy loss process is an important tool for probing the properties of the medium. In my talk, I will review our current quantitative understanding of the energy loss process and discuss possible observable effects of the energy deposition on the medium

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