Sunday, May 3, 2009 10:45AM - 12:33PM –
Session H3 GHP: Nucleon Structure and Fundamental Symmetries Plaza E

10:45AM H3.00001 Testing fundamental symmetries with parity-violating electron scattering
DAVID S. ARMSTRONG, College of William & Mary — Electroweak interference leads to the presence of parity violation in electron scattering, which is measurable in experiments that scatter polarized electrons from unpolarized targets. This phenomenon was originally exploited in the classic SLAC experiment in the 1970s (C.Y. Prescott, et al. Phys. Lett. 84B (1979) 524) which was pivotal in establishing the neutral current sector of the Standard Model. The technique has been used more recently as a probe of nucleon structure, such as the determination of vector strange form factors, in experiments at MIT/Bates, MAMI, and Jefferson Lab. More recently, renewed attention has been focused on tests of fundamental symmetries and searches for physics beyond the Standard Model using this technique. Recent results will be reviewed, and the prospects for several upcoming experiments at Jefferson Lab (Qweak, disParity) as well as proposed experiments with the 12 GeV upgraded facility will be discussed.

11:21AM H3.00002 Current Status and Expected Developments in Nucleon Structure Measurements
CYNTHIA KEPPEL, Hampton University — No abstract available.

11:57AM H3.00003 Overview of Nucleon Structure Theory
FENG YUAN, Lawrence Berkeley Lab/RBRC — In this talk, I will present an overview of the progress we have made in the last century concerning the fundamental structure of the most abundant particles around us–nucleon. The focus will be recent developments on nucleon structure at very small-x (high energy) and its spin.

Monday, May 4, 2009 10:45AM - 12:33PM –
Session Q4 GHP: Opportunities in Hadron Spectroscopy Plaza F

10:45AM Q4.00001 Theoretical Challenges in Hadron Spectroscopy
ERIC SWANSON, Univ of Pittsburgh — No abstract available.

11:21AM Q4.00002 Opportunities for Heavy Hadron Spectroscopy
MARJORIE CORCORAN, Rice University — No abstract available.

11:57AM Q4.00003 Symmetries and Hadron Spectroscopy with WASA-at-COSY
MAGNUS WOLKE¹, Institute for Nuclear Physics and Juelich Centre for Hadron Physics, Research Centre Juelich, D-52425 Juelich, Germany — Experiments with the WASA detector at COSY Juelich focus both on studies of symmetries and symmetry breaking mechanisms in hadronic systems as well as hadron spectroscopy, to investigate the properties of QCD in the non-perturbative regime, where confinement and chiral symmetry breaking are the characteristic phenomena. Isospin violation and tests of conservation of the fundamental C, P, and T invariances and combinations thereof are the key physics issues in studies of \( \eta \) decays. From the very first production run, results on the Dalitz plot slope parameter in the isospin violating \( \eta \to 3\pi^0 \) decay have been obtained. End of 2008, a high statistics data sample of more than \( 10^7 \) neutral and charged \( \eta \) decays has been recorded in the reaction \( pd \to ^3\text{He} \eta \), in which \( \eta \) tagging can be solely based on \( ^3\text{He} \) detection and is thus unbiased with respect to the \( \eta \) decay system. Low–mass enhancements in isoscalar \( \pi\pi \) invariant mass distributions in nuclear fusion reactions to few–body systems \( d, ^4\text{He}, \) and \( ^4\text{He} \), known as the ABC effect, have been reproduced in exclusive data taken with the WASA detector at CELSIUS. The data indicate the formation of an isoscalar \( p \eta \) resonance coupling to a \( \Delta\Delta \) intermediate state. Follow–up high–statistics experiments have recently been performed on the reactions \( pn \to d\pi\pi \) and \( dd \to ^4\text{He}\pi\pi \) covering the complete energy range relevant for the ABC effect with WASA-at-COSY. Physics results obtained so far and the physics program with WASA-at-COSY will be presented. The scientific potential for hadron spectroscopy at COSY will be related to activities at Jefferson Lab, and will be discussed in view of future opportunities, e.g. at the FAIR facility at Darmstadt (Germany).

¹for the WASA-at-COSY Collaboration