

Feb 8th, 10:30 AM - 11:30 AM

Facets of Physical Sciences

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10:30 AM – 11:30 AM (Learning Commons # 1310)

Facets of Physical Sciences

Chair: Dr. Stephen Bueltmann

Department of Physics

Corrosion of Aluminum on Navy Ships

By COLTON KATSARELIS

Corrosion of metal depends on its chemical activity and the environmental conditions. Aluminum used in naval vessels is mainly susceptible to galvanic corrosion due to salt water. Examples of aluminum corrosion and its analysis on navy ships will be discussed and protective methods described.

Polarized Target for CLAS12 at Jlab

By KATHERYNE MCMAHAN

The study of the spin-dependence of the nucleon structure with electron scattering experiments requires targets of spin-polarized nuclei. We report on the development of a new solid polarized target for the CLAS12 detector presently being installed in Jefferson Lab's Hall B. The talk will emphasize the polarization measurement of proton and deuterons with the nuclear magnetic resonance (NMR) technique.

The Determination of Positronium Formation Cross Sections using the CTMC Method, and its Applications

By TIMOTHY NAGINEY

Charge exchange cross sections are presented for collisions of positron and protons with hydrogen, neutral and singly ionized helium targets, using a variant of the classical trajectory Monte Carlo (CTMC) approach. The basic physics of e^+e^- creation and annihilation is overviewed and a formalism for the computational calculation presented.

Scintillation Counters for Hall C at Jlab

By JAMES PORTER

The doubling of the electron beam energy at Jefferson Lab to 12 GeV requires the development of new or reconfiguration of existing detectors. Scintillation detectors, previously used with the CLAS detector in Hall B are being refurbished at ODU and will be used for new experiments in Hall C.

Positronium Formation from Positron Impact *off* Hydrogen and Helium Targets

By ERIC STACY

Charge exchange cross sections are presented for collisions of positron and protons with hydrogen, neutral and singly ionized helium targets, using a variant of the classical trajectory Monte Carlo (CTMC) approach. The basic physics of e^+e^- creation and annihilation is overviewed. It is shown that for atomic hydrogen and helium targets electron capture by a free positron to form positronium is vastly more probable than inflight annihilation. Good agreement with available experiment is found and the charge cross section for positron of He^+ predicted.