

Physics Division Seminar

**Gerald Miller**

University of Washington

**Taming the Pion Cloud of the Nucleon**

Host: Ian Cloët

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The exchange of a pion between two nucleons has long been known to be the origin of the longest-ranged component of the force. The existence of this term means that a nucleon can exchange a pion with itself, and therefore is said to have a pion cloud. For example, a proton can fluctuate into a neutron and a positively charged pion. The result is that anti-down quarks dominate the proton's sea quark distribution. However, the ability to make quantitative calculations has been hindered by ambiguities related to short-distance aspects. We show how these ambiguities may be removed, so that calculations with reliably estimated uncertainties can be made. Thus, the existence of the pion cloud will be definitively tested in the SeaQuest experiment.

PHY Seminar