

Abstract Submitted  
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**Chiral Light Front Perturbation Theory and the Flavor Dependence of the Light-Quark Nucleon Sea**<sup>1</sup> MARY ALBERG, Seattle University and University of Washington, GERALD A. MILLER, University of Washington — The light-quark flavor dependence of the proton sea has been of great interest for many years because of its close connection with non-perturbative effects. One hypothesis is that the sea arises from the pion cloud of the proton. We make precise predictions, based on the pion cloud idea, for the anticipated final results of the SeaQuest experiment. This is achieved by applying light cone perturbation theory and experimental constraints to a chiral Lagrangian so that the relevant Fock-space components of the nucleon wave function are computed with reasonable accuracy. We compare our results to existing experimental information from E866 regarding the light flavor sea, and make predictions, including uncertainties, for future experimental measurements. Future experimental results will either confirm or rule out the idea that the pion cloud provides the flavor dependence of the proton's sea quark distributions, and have profound implications for understanding the nucleon-nucleon force.

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