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Splitting Functions for the Pion Cloud Model of the Proton Sea Asymmetry<sup>1</sup> KARA MERFELD, University of Puget Sound, KAYLA FU-RUKAWA, FERAS ALDAHLAWI, Seattle University — The proton contains three valence quarks of different types: two up quarks and a down quark, as well as a sea of quarks, antiquarks, and gluons. Due to Heisenberg's uncertainty principle, it is possible for these constituents to fluctuate into a pion and a nucleon, a phenomenon that contributes to the downbar-upbar asymmetry in the proton sea. The probability of a proton splitting into a meson and a baryon is represented by the splitting function,  $f_{MB}$ . We investigate the asymmetry in the proton sea using the pion cloud model, and study how the downbar and upbar distributions depend on the forms of the splitting function, for the pion-nucleon and pion-delta terms.

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