A Pomeron-Quark Vertex that Has The Correct Property under The Charge Conjugation LON-CHANG LIU, Los Alamos National Laboratory — High-energy pp scattering suggests that its leading-order dynamics is associated with the exchange of a Pomeron between two quarks. One extensively used model for the Pomeron-quark coupling is the γ_μ coupling model where the Pomeron couples to a quark like an isoscalar photon [P.V. Landshoff and O. Nachtmann, Z. Phys.C35, 45 (1987); A. Donnachie and P.V. Landshoff, Phys. Lett. B185, 403 (1987)]. The model has, however, an intrinsic difficulty, namely, the γ_μ coupling is odd under charge conjugation while the Pomeron exchange is even under the charge conjugation [M.A. Pichkowsky and T.-S. H. Lee, Phys. Rev. D56, 1644 (1997)]. I show that the Pomeron-quark coupling behaves like a tensor coupling which has the correct transformation property under the charge conjugation. [Lon-chang Liu, Proc. of The 10th International Baryons Conference, Palaiseau, France, 2004]. I further show why the γ_μ model can have empirical success inspite of its difficulty at the basic level.

Lon-chang Liu
Los Alamos National Laboratory