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Chiral dynamics in the gamma p \rightarrow p pi⁰ reaction

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We investigate the neutral pion photoproduction on the proton near threshold in covariant chiral perturbation theory with the explicit inclusion of Delta degrees of freedom. This channel is specially sensitive to chiral dynamics and the advent of very precise data from the Mainz microtron has shown the limits of the convergence of the chiral series for both the heavy baryon and the covariant approaches. We show that the inclusion of the Delta resonance substantially improves the convergence leading to a good agreement with data for a wider range of energies.

e-Print: [arXiv:1412.4083](https://arxiv.org/abs/1412.4083) [hep-ph]

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