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## Study of excited η mesons in photoproduction at CLAS

Monday, 31 August 2015 14:00 (15 minutes)

The CLAS experiment at CEBAF at Jefferson Laboratory investigates photon scattering on the proton with high intensities. The analysis presented in this talk focuses on the reaction  $\gamma p \to p\pi + \pi - \eta$  to investigate excitations of  $\eta$  mesons. The observed  $\eta$  as well as the  $\eta(1295)$  and  $\eta(1405)$  decay preferably to  $\pi + \pi - \eta$ . The main goal is to improve the present knowledge of these states. Based on SU(3) symmetry for the light mesons a singlet as well as an octet is formed. Each contains one isoscalar state which mix to the lightest pseudoscalar mesons  $\eta$  and  $\eta$ . Thus two first radial excitations are expected, but three states were found:  $\eta(1295)$ ,  $\eta(1405)$  and  $\eta(1475)$ . The  $\eta(1405)$  is debated to be a gluonic bound state, because it has been observed in gluon rich production mechanisms only. In this scenario the  $\eta(1405)$  should have a low production cross sections in  $\gamma p \to p\pi + \pi - \eta$ .

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