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Photon emission in (anti)neutrino neutron current interactions with nucleons and nuclei

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We report on the study of photon emission induced by E_nu ~ 1 GeV (anti)neutrino neutral current interactions with nucleons and nuclei. This process is an important background for nu_e appearance oscillation experiments. At the relevant energies, the reaction is dominated by the excitation of the Δ(1232) resonance, but there are also non-resonant contribution, that, close to threshold, are fully determined by the effective chiral Lagrangian of strong interactions. In addition, we also consider the heavier resonances contributions in high energy region. With our model, we predict the events number of photon emission of the NC interactions in the MiniBooNE experiments and T2K experiment.

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