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The possibility of finding the P-symmetry breaking decay of the charged a0 meson

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The spatial parity (P) violation in strong interactions have never been observed experimentally. One can include a P-breaking term in the QCD lagrangian. Thus, there can be a local violation of P-symmetry in the medium with hight temperature and large topological fluctuations [1]. As a consequence, some hadrons would decay in channels that forbidden by the global parity conservation [2]. In this work we investigate the possibility of observing such process: decay of a charged a_0 meson into charged pion and photon [3]. We study an invariant-mass spectrum of $\pi^{\pm} - \gamma$ pairs produced in PYTHIA Monte Carlo generator with enabled $a_0^{\pm} \rightarrow \pi^{\pm} + \gamma$ decay channel. To distinguish the peak of mentioned decay from the background the mixed-event substracting, kinematic cuts and Dalitz plots analysis was used. As a result we have estimated minimal number of pp collision events for signifacant signal of the P-breaking decay.

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References:

[1] D. Kharzeev, Annals of Physics, 325, 1. 205 – 218 (2010).

[2] A.Andrianov, D.Espriu and X.Planells, Eur. Phys.J. C73 (2013) no.1, 2294

[3] A. Andrianov et al, EPJ Web of Conferences 158, 03012 (2017).

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