

# DISTRIBUTION OF SECONDARY PARTICLES IN DEPENDENCE ON TRANSVERSE MOMENTUM IN HIGH ENERGY COLLISIONS OF PROTONS AND SIGNALS OF DARK MATTER IN THE SPECTRA OF PHOTONS

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Developing a statistical model of multiple particle production based on [1-3], an algorithm is proposed for finding the transverse momentum distribution  $\Lambda$ - hyperons formed in pp collisions at energies  $\sqrt{s}$  of 53, 200, 900 and 7000 GeV [4]. The calculated spectra of hyperons are consistent with experimental data and calculations using the quark-gluon string model [5]

Analyzing, following [6], the experimental data [7] on the spectra of soft photons depending on the transverse momentum, in this work it is proposed to interpret the hardening of the spectrum [7] as a manifestation of the contribution of a new X17 boson particle with a mass of about 17 MeV, which is a candidate for the role of particles of dark matter. An algorithm for finding the mass of the X17 boson based on the tube model is proposed. The interpretation of experimental data on the spectra of soft photons with the help of new particles - bosons X17 and X38 [8] was proposed. They can form massive dark matter objects in astrophysics. The presence of the boson mass X17, equal to 17 MeV, and X38, equal to 38 MeV, is substantiated, proceeding from the electromagnetic tube when combining two-dimensional QCD<sub>2</sub> and QED<sub>2</sub>.

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