

Measurement of charmonium production in $p + p$ and $p + d$ interaction in the Fermilab SeaQuest experiment

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SeaQuest has measured dimuon events from the interaction of 120 GeV proton beam on liquid hydrogen and deuterium targets with dimuon mass between 2 and 8 GeV. These dimuon events contain both the Drell-Yan process and the charmonium (J/ψ and ψ') production. Unlike the Drell-Yan process which probes the antiquark distributions in the nucleons, the charmonium production is sensitive to both quark and gluon distributions. SeaQuest has extracted the $(p+d)/(p+p)$ cross section ratios as well as the differential cross sections for charmonium production in the kinematic region of $0.4 < x_F < 0.9$. The $(p+d)/(p+p)$ cross section ratios for charmonium production are found to be significantly different from that of the Drell-Yan process. The measured differential cross sections for charmonium production are compared with theoretical model calculations. The beam energy dependence of the charmonium production cross sections will also be presented.

Submitted on behalf of a Collaboration?

Yes

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