

Contribution ID : 30

## Energy dependence of anti-proton/proton ratio in p+p collisions

### Content :

Ratios of anti-baryons to baryons give the information on baryon pair-production and baryon transport in high energy collisions. We have compiled the experimentally measured anti-proton to proton ratio at mid-rapidity in p+p collision from centre of mass energy of 23 GeV to 7000 GeV. These results have been compared to various baryon production mechanisms as implemented in PYTHIA, PHOJET and HIJING/B-Bbar models. For models with default settings, PHOJET gives the best description of the data for all beam energies, PYTHIA gives higher value of the ratio for beam energies below 200 GeV and HIJING/B-Bbar gives consistently lower value for all energies. A detailed investigation of various mechanism of baryon production as implemented in PYTHIA has been done. Also we have studied the energy dependence of the asymmetry ratio, a measure of baryon stopping at mid-rapidity, in p+p collisions. It is observed that the fraction of proton stopped at mid-rapidity varies from 46% at 23 GeV to 0.05% at 7000 GeV in p+p collisions. Comparison of beam energy dependence of the anti-proton to proton ratio in p+p and nucleus-nucleus (A+A) collisions at mid-rapidity shows that a larger fraction of baryon is transported to midrapidity in A+A collision than in p+p collision.

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Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--