Turkish Journal of Physics

Turkish Journal

of

Physics

Search for Supersymmetry at γp - Colliders

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Abstract: We discuss the possibility of searching supersymmetry at TeV scale γ p colliders proposed recently. Theoretical predictions are derived within the framework of minimal supersymmetric standard model (MSSM) with R-parity conservation. Productions of squarks, gluinos, charginos and neutralinos through the processes γ p\rightarrow\tilde{q}\tilde{w}X, γ p\rightarrow\tilde{q}\tilde{g}X, γ p\rightarrow\tilde{q}\tilde{γ}X (or \tilde{q}\tilde{z}) and γ p\rightarrow\tilde{q}\tilde{q}*X are considered. Cross sections for different initial beam polarizations are calculated and it is shown that polarization asymmetries are sensitive to the particle masses. Discovery mass limits of the superpartners are tabulated for various γ p colliders at different center of mass energies. The results are compared with those for the existing and future $e^{+}e^{-}$, ep and pp colliders, and we conclude that the TeV scale γ p colliders will provide in principle convenient ways to search supersymmetry.

Keywords
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Turk. J. Phys., **22**, (1998), 629-630.
Full text: pdf
Other articles published in the same issue: Turk. J. Phys.,vol.22,iss.7.