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Impact of punctual flat magnetic shear on the field line transport

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We investigate the magnetic field line transport for tokamak equilibria with monotonic magnetic shear perturbed by resonant fields. We show that when the local profile is flat at the plasma edge a transport barrier can be created leading to a field line transport reduction. This transport reduction is due to the field lines topological modifications, caused by a local flattened profile that reduces the global field lines escape pattern. The results are obtained by applying a symplectic map that describes perturbed magnetic field lines in large aspect ratio tokamaks.

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