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Searches for Leptoquark production in $p\bar{p}$ collisions at the D0 experiment

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We report on searches for the production of scalar and vector leptoquarks in $p\bar{p}$ collisions at the Tevatron collider, which are based on integrated luminosities of up to 1\,fb^{-1} collected with the D\O{} detector. Leptoquarks, which are predicted by several extensions of the Standard Model, are hypothetical particles carrying both lepton and quark flavors. At hadron colliders they can either be pair-produced via the strong interaction or a single leptoquark can be produced in association with a lepton via the hypothesized leptoquark-lepton-quark coupling.

Searches for the pair-production of leptoquarks of all three generations have been performed using the $LQ\overline{LQ} \to l^+l^-q\bar{q}$, $\to l^{\pm}\nu q\bar{q}$, and $\to \nu\bar{\nu}q\bar{q}$ final states. A search for the single production of leptoquarks coupling to muons is based on the decay channel $LQ\mu \to \mu q\mu$. Upper limits on the production cross sections are given and are used to derive lower limits on the leptoquark masses.

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