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Very special relativity. (English) Zbl 1228.83009

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Summary: By very special relativity (VSR) we mean descriptions of nature whose space-time symmetries are certain proper subgroups of the Poincaré group. These subgroups contain space-time translations together with at least a two-parameter subgroup of the Lorentz group isomorphic to that generated by $K_x + J_y$ and $K_y - J_x$. We find that VSR implies special relativity (SR) in the context of local quantum field theory or of CP conservation. Absent both of these added hypotheses, VSR provides a simulacrum of SR for which most of the consequences of Lorentz invariance remain wholly or essentially intact, and for which many sensitive searches for departures from Lorentz invariance must fail. Several feasible experiments are discussed for which Lorentz-violating effects in VSR may be detectable.

MSC:

83A05 Special relativity

Cited in **41** Documents

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References:

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