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Chern–Simons formulation of three-dimensional gravity with torsion and nonmetricity.

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Various models of three-dimensional metric affine gravity are considered and it is shown that they can be written as Chern-Simons theories. Starting from the usual formulation of three-dimensional gravity and using a nonstandard decomposition of the Chern-Simons connection, the Mielke-Baekler model for arbitrary sign of the effective cosmological constant is recovered. The three-dimensional gravity with torsion is realized as a Chern-Simons theory. Torsionless but nonmetric gravitational models are considered as well.

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MSC:

[83D05](#) Relativistic gravitational theories other than Einstein's, including asymmetric field theories

Cited in **6** Documents

[83C80](#) Analogues of general relativity in lower dimensions

[83C45](#) Quantization of the gravitational field

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