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**Symmetry reduction of asymmetric heavenly equation and 2+1-dimensional bi-Hamiltonian system.** (English) [Zbl 1300.35126](#)

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Summary: Asymmetric heavenly equation, presented in a two-component form, is known to be 3 + 1-dimensional bi-Hamiltonian system. We show that symmetry reduction of this equation yields a new two component 2 + 1-dimensional integrable bi-Hamiltonian system. We prove that this new 2 + 1-dimensional system admits bi-Hamiltonian structure, so that it is integrable according to Magri's theorem.

**MSC:**

**35Q53** KdV equations (Korteweg-de Vries equations)

**70F15** Celestial mechanics

**83C05** Einstein's equations (general structure, canonical formalism, Cauchy problems)