Hojman Conservation Laws for Relativistic Birkhoffian System

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Abstract: For a relativistic Birkhoffian system, the Lie symmetry and Hojman conserved quantity are given under infinitesimal transformations. On the basis of the invariance of relativistic Birkhoffian equations under infinitesimal transformations, Lie symmetrical transformations of the system are constructed, which only depend on the Birkhoffian variables. The determining equations of Lie symmetry are given, and a Hojman conserved quantity is directly obtained from Lie symmetry of the system. An example is given to illustrate the application of the results.

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