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Nonstationary configurations of a spherically symmetric massless scalar field

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Nonstationary configurations of a massless spherically symmetric scalar field are considered. We use an approach to the construction of nonstationary gravitating configurations of a scalar field, which makes it possible to reduce the Einstein-scalar field system to a single equation written in invariant quantities. New exact and numerical nonstationary solutions for a massless scalar field are obtained. These solutions are associated with characteristic functions of a special form. It is shown that there are no asymptotically flat solutions for the considered classes of characteristic functions.

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