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A symmetry of Brans-Dicke gravity as a novel solution-generating technique

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Brans-Dicke gravity, enriched by the possibility of an arbitrary potential V (ϕ) for the Brans-Dicke scalar field, and in the presence of conformally invariant matter admits a 1-parameter symmetry group. We explore the use of these symmetries as a solution-generating technique using known solutions as seeds. We apply this technique to generate, as examples, new spatially homogeneous and isotropic cosmologies, a 3-parameter family of spherical and time-dependent spacetimes conformal to a Campanelli-Lousto geometry, and a new family of cylindrically symmetric geometries

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