Title: Trans-Sasakian manifolds homothetic to Sasakian manifolds

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In this paper, we obtain necessary and sufficient conditions for a 3-dimensional compact and connected trans-Sasakian manifold of type (α, β) to be homothetic to a Sasakian manifold. We also show that if a compact trans-Sasakian manifold admits an isometric immersion in the Euclidean space R^4 with Reeb vector field being transformation of unit normal vector field under the complex structure of R^4, then it is homothetic to a Sasakian manifold. We also introduce the axiom of flat torus for a 3-dimensional trans-Sasakian manifold and show that a 3-dimensional connected trans-Sasakian manifold with Ricci curvature in the direction of Reeb vector field a nonzero constant, satisfying axiom of flat torus is homothetic to a Sasakian manifold.

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