# SOME PROPERTIES OF THE GRADIENT RICCI-YAMABE SOLITONS

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In this work, we examine the conditions under which a compact gradient Ricci-Yamabe soliton is Einstein, that is, when the soliton is trivial. We then proceed to establish that a potential vector field is Killing whenever it is solenoidal. Furthermore, we investigate that a radially flat gradient Ricci-Yamabe soliton is rigid. Finally, we prove that a gradient Ricci-Yamabe soliton admits non-parallel, closed homothetic vector fields under certain conditions.

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## 1. Introduction

Richard Hamilton [3] was the first to introduce the concepts of Ricci and Yamabe flows. The Ricci-Yamabe solitons correspond to self-similar solutions of the Yamabe flow. Hamilton provided the following definition of Ricci flow as follows: Given a Riemannian manifold $M$ with metric $g$, the Ricci flow is a partial