

Gravitational Instantons, Weyl Curvature, and Conformally Kähler Geometry

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This talk will describe my recent joint work with Olivier Biquard and Paul Gauduchon on ALF Ricci-flat Riemannian 4-manifolds. My collaborators had previously classified all such spaces that are toric and Hermitian, but not Kähler. Our main result uses an open curvature condition to prove a rigidity result of the following type: any Ricci-flat metric that is sufficiently close to a non-Kähler, toric, Hermitian ALF solution (with respect to a norm that imposes reasonable fall-off at infinity) is actually one of the previously-classified solutions.