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Selfduality along Ricci flow and instabilities of Einstein metrics

Einstein metrics and Ricci solitons are the fixed points of Ricci flow and model the singularities forming. They are also critical points of natural functionals in physics. Their stability in both contexts is a crucial question, since one should be able to perturb away from unstable models.

I will present new results and upcoming directions about the stability of these metrics in dimension four in joint works with Olivier Biquard, and with Keaton Naff. They rely on selfduality, a specificity of dimension four.