Classification, rigidity and new examples of complete critical metrics of a quadratic curvature functional

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In this talk I will describe some "old" and new rigidity results for complete, possibly non-compact, critical metrics of the quadratic curvature functional

$$\mathfrak{S}^2 = \int S_g^2 dV_g,$$

where (M^m, g) is a m-dimensional Riemannian manifold and S_g is the scalar curvature of the metric g. I will show that critical metrics (M^m, g) with finite energy are always scalar flat, i.e. global minima, provided $m \geq 5$, while mere boundedness and pointwise decay do not force scalar flatness, showing some explicit examples of critical metrics on a product manifold.

Acknowledgements

Joint work(s) with Giovanni Catino and Dario D. Monticelli (Politecnico di Milano).

References

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