

On Optimal 4-Dimensional Metrics

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This lecture will discuss the problem of determining which smooth compact 4-manifolds admit Riemannian metrics that minimize the L^2 -norm of the curvature tensor. Einstein metrics and scalar-flat anti-self-dual metrics provide us with two interesting classes of examples. The talk will describe some recent methods for proving existence or non-existence of such metrics on specific 4-manifolds that crucially depend on ideas from conformal geometry.