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**JEROME VETOIS**, McGill University

*Existence results for the higher-order Q-curvature equation*

In this talk, we will discuss the problem of prescribing the Q-curvature of order  $2k$  on a closed Riemannian manifold of dimension  $n > 2k$ , where  $k$  is an integer. This amounts to solving a nonlinear elliptic PDE involving a  $2k$ -th order operator called the Graham-Jenne-Mason-Sparling (GJMS) operator. I will present new existence results for this problem under assumptions of coercivity of the operator and positivity of the Green's function, which are satisfied for instance when the manifold is Einstein. An additional positive mass assumption is also required in the case of small dimensions  $2k + 1 \leq n \leq 2k + 3$  and locally conformally flat manifolds. This is a joint work with Saikat Mazumdar (Indian Institute of Technology Bombay).