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Jie Qing*, University of California, Santa Cruz, CA 95064, and **David Raske**, University of California, Riverside, CA 92697. *Yamabe problem of higher order.*

In this talk we report our study of the existence and compactness of positive solutions to a family of conformally invariant equations generalizing the Yamabe equations. The family of conformally covariant operators were introduced via the scattering theory for Poincaré metrics associated with a conformal manifold. On a closed and locally conformally flat manifold with Poincaré exponent small, the compactness and existence of positive solutions to the Yamabe problem of higher order were obtained. (Received March 06, 2006)