

Research Highlight: Refined estimates for simple blow-ups of the scalar curvature equation on S^n

Work of Associate Professor LEUNG Man Chun

In their work on a sharp compactness theorem for the Yamabe problem, Khuri, Marques and Schoen [J. Differential Geom. **81** (2009), 143– 196] apply a refined blow-up analysis (what we call ‘second order blow-up argument’ in this article) to obtain highly accurate approximate solutions for the Yamabe equation. As for the conformal scalar curvature equation on the n -sphere with $n \geq 4$, we examine the second order blow-up argument and obtain a refined estimate for a blow-up sequence near a simple blow-up point. The estimate involves the local effect from the Taylor expansion of the scalar curvature function, the global effect from other blow-up points, and the balance formula as expressed in the Pohozaev identity in an essential way.

Reference:

LEUNG, Man Chun., Transactions of the American Mathematical Society, **370** (2018), 1159-1184.