

A maximal nondegenerate sign-changing solution for the Yamabe problem

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Abstract

In this talk we will construct a sequence of nondegenerate (in the sense of Duyckaerts-Kenig-Merle ([2])) nodal nonradial solutions to the critical Yamabe problem

$$-\Delta u = \frac{n(n-2)}{4} |u|^{\frac{4}{n-2}} u, \quad u \in \mathcal{D}^{1,2}(\mathbb{R}^n),$$

which, for $n = 4$, provides the first example in the literature of a solution with *maximal rank*.

This is a joint work with M. Musso and J. Wei that can be found at arxiv.org/pdf/1712.00326.pdf.

References

- [1] M. del Pino, M. Musso, F. Pacard, A. Pistoia, Large energy entire solutions for the Yamabe equation. *Journal of Differential Equations* 251 (2011), 2568–2597.
- [2] T. Duyckaerts, C. Kenig, F. Merle, *Solutions of the focusing nonradial critical wave equation with the compactness property*, To appear in *Ann. Sc. Norm. Super. Pisa Cl. Sci.*
- [3] M. Musso, J. Wei, Nondegeneracy of nodal solutions to the critical Yamabe problem. *Communications in Mathematical Physics*, Volume 340, Issue 3, (2015), 1049–1107.

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