The Singular Yamabe Problem

(3 Lectures)

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Geometrically the problem is to find, on subdomains of the n-dimensional sphere ($n > 2$), complete metrics which are conformal to the standard metric and have constant scalar curvature. The study of this problem has been initiated by R. Schoen and S.T. Yau since it plays a crucial role in the classification of locally conformally flat, complete manifolds with constant scalar curvature. This geometric problem reduces to the study of singular solutions of semilinear elliptic equations. In this course we explain how to solve the singular Yamabe problem in various situations. This will be the opportunity to introduce tools of the analysis of elliptic operator on compact manifolds which have been developed by Mazzeo and Melrose.