Fractional conformal Laplacians
and fractional Yamabe problems.

Based on the relations between scattering operators of asymptotically hyperbolic metrics and Dirichlet-to-Neumann operators of uniformly degenerate elliptic boundary value problems, we formulate fractional Yamabe problems that include the boundary Yamabe problem studied by Escobar. We observe an interesting Hopf type maximum principle together with interplays between analysis of weighted trace Sobolev inequalities and conformal structure of the underlying manifolds, which extend the phenomena displayed in the classic Yamabe problem and boundary Yamabe problem. (Received March 01, 2011)