Saari, Olli (University of Bonn, Germany) On endpoint regularity of maximal functions

Abstract: A twenty-year-old theorem of Kinnunen shows that the usual Hardy–Littlewood maximal operator maps $W^{1,p}(\mathbb{R}^n)$ boundedly into itself when p > 1. At the level of homogeneous norms, this result was extended to p = 1 when n = 1 by Tanaka and Kurka. In this talk, I will describe recent results motivated by the question whether Tanaka's theorem can be extended to all dimensions. This includes boundedness of smooth maximal functions on Hardy-Sobolev spaces as well as a result about maximal function of a function satisfying a generalized Poincaré inequality.