1142-42-131 **Steve Hofmann*** (`hofmanns@missouri.edu`), Department of Mathematics, University of Missouri, Columbia, MO 65211. *Quantitative rectifiability and the Varopolous extension theorem for BMO.*

N. Varopolous proved a remarkable extension property for BMO, namely (to state it in the simplest context), that $f \in BMO(\mathbb{R}^n)$ has a smooth extension F to the half-space $\mathbb{R}^{n+1}_+ := \{(x,t) \in \mathbb{R}^n \times (0,\infty)\}$, such that $|\nabla F(x,t)|dxdt$ is a Carleson measure. It is worth noting that such a result may fail for the harmonic (Poisson) extension $u(\cdot,t) = p_t * f$, which enjoys the more familiar property that $|\nabla u(x,t)|^2 t dxdt$ is a Carleson measure. This result was motivated in part by the fact that it yields an alternative proof of Fefferman's H^1-BMO duality theorem, and in part (via a version for strictly pseudoconvex domains in $\mathbb{C}^n$) by a failed attempt to prove a higher dimensional version of Carleson's Corona theorem.

The extension theorem itself is a consequence of the so-called "ε-approximability" property of bounded harmonic functions, introduced originally by Varopolous and refined by Garnett. In this talk, we present joint work with Olli Tapiola, in which we obtain a version of the Varopolous extension theorem for a domain Ω given by the compliment of a uniformly rectifiable set of co-dimension 1. (Received August 31, 2018)