1121-35-126 **Zihui Zhao***, zhaozh@uw.edu. *Absolute continuity of harmonic measure and the solvability of elliptic equations.*

For a domain $\Omega$, people have been interested in the relationship between the harmonic measure $\omega$ and the surface measure $\sigma$ of the boundary. In particular, if $\omega \ll \sigma$, what can we say about the geometry of the domain and the solutions to elliptic equations in $\Omega$; and vice versa? This talk will focus on the analytic side of the story. We consider a quantitative version of absolute continuity $\omega \in A_\infty(\sigma)$, and we show it is equivalent to the BMO-solvability of elliptic equations: for any continuous function $f \in BMO(\sigma)$, let $u$ be the solution to $-div(A(x)\nabla u) = 0$ with boundary data $f$, then $|\nabla u|^2\delta(x)dx$ is a Carleson measure, with constant bounded by $\|f\|_{BMO}^2$. BMO-solvability is in fact the limit case of standard $L^p$-solvability. (Received July 15, 2016)