Abstract:

Let $M$ be a smooth, compact, connected two-dimensional, Riemannian manifold without boundary, and let $C_{\varepsilon}$ be the amount of time needed for the Brownian motion to come within (Riemannian) distance $\varepsilon$ of all points in $M$. The first order asymptotics of $C_{\varepsilon}$ as $\varepsilon$ goes to 0 are known. We show that for the two dimensional sphere

$$\sqrt{C_{\varepsilon}} - 2\sqrt{2}(\log\varepsilon^{-1} - \frac{1}{4}\log\log\varepsilon^{-1})$$

is tight.

Joint work with David Belius and Ofer Zeitouni.