Abstract:

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

$$\sqrt{C_\epsilon} - 2\sqrt{2} \left( \log \epsilon^{-1} - \frac{1}{4} \log \log \epsilon^{-1} \right)$$

is tight.

Joint work with David Belius and Ofer Zeitouni.