1154-VT-1869 **Mark Landry*** (`landrym5@msu.edu`), **Paige Pearcy** and **Cheuk-Yin Lee**. *Multiple Points of Fractional Brownian Motion in $\mathbb{R}^d$.*

In 1987, Nils Tongring showed that if X is a Brownian motion in $\mathbb{R}^2$, E is a fixed, nonempty compact set in the plane with positive logarithmic capacity of order k, where k is a positive integer, then E contains k-tuple points for almost all paths. We define x to be a k-tuple point for the path ω if there are times $t_1 < t_2 < ... < t_k$ such that $x = X(t_1, \omega) = X(t_2, \omega) = ... = X(t_k, \omega)$. In this paper, we extend these findings to fractional Brownian motion where the assumption of independent increments is relaxed. Using the property of local nondeterminism, we show that if B is a fractional Brownian motion in $\mathbb{R}^d$ with Hurst index H such that $Hd = 1$, and E is a fixed, nonempty compact set in $\mathbb{R}^d$ with positive logarithmic capacity of order k, then E contains k-tuple points with positive probability. We also show that under the same conditions, but with Hurst index H such that $Hd > 1$, then if E is a fixed, nonempty compact set in $\mathbb{R}^d$ with positive capacity with respect to the function $\phi(s) = \frac{1}{s^{k(d-1/H)}}$, then E contains k-tuple points with positive probability. (Received September 16, 2019)