1138-60-391 **Máté Wierdl*** (wierdlmate@gmail.com), Department of Mathematical Sciences, The University of Memphis, memphis, TN 38152. *Simultaneous recurrence of stationary random walks.* Preliminary report.

The talk is about a problem raised by M. Boshernitzan: Does a stationary random walk simultaneously revisit the origin infinitely often along two different step sizes?

Let us be precise: Let (Ω, Σ, P) be a probability space; $T : \Omega \to \Omega$ an invertible, ergodic m.p.t.; $F : \Omega \to \mathbb{Z}$ measurable. Define the random walk F^n defined by

$$F^n(\omega) = \begin{cases} \sum_{0 \le k < n} F(T^k \omega), & \text{for } n > 0; \\ 0, & \text{for } n = 0; \\ \sum_{n \le k < 0} F(T^k \omega), & \text{for } n < 0. \end{cases}$$

It is well known that if $\int F = 0$ then almost surely $F^n = 0$ for infinitely many n.

Boshernitzan's question is if the random walks (F^n) and (F^{2n}) almost surely return to the origin *simultaneously*, that is almsot surely, are there infinitely many n so that $F^n = F^{2n} = 0$?

Presently, we cannot answer the question, but we will examine some special cases, and present evidence that the answer to Boshernitzan's question is, in general, no.

We also show that simultaneous *triple* return to the origin is, in general, doesn't happen. The counterexample is provided in case $(T^n F)$ is an iid sequence. (Received February 13, 2018)