1176-37-160 **Sovanlal Mondal*** (smondal@memphis.edu), Department of Mathematical Sciences, University of Memphis, Memphis, TN 38152. *Grid method in the context of universally bad sequence.*

This talk will introduce 'grid method' to prove that the Cesaro averages

$$A_N(f)(x) = \frac{1}{N}\sum_{n=1}^{N} f(U_{n^\alpha})(x) \tag{1}$$

obtained by sampling a flow along the sequence of times of the form $\{n^\alpha : n \in \mathbb{N}\}$ diverge in the worst possible way (i.e. 'strong sweeping out'); where α is a $non-integer\ rational\ number$, (X, Σ, λ) is a non-atomic Lebesgue space and (U_t) is an ergodic continuous measure preserving flow on (X, Σ, λ).

In 1994, V. Bergelson, M. Boshernitzan and J. Bourgain first showed using Bourgain's entropy method that the above averages diverge a.e. for all f in L^∞. Later, the proof was simplified and improved by R. Jones and M. Wierdl. They showed that for any given $\epsilon > 0$, there exists $E \in \Sigma$ such that $m(E) < \epsilon$ and for a.e. x, $\limsup_{n\to\infty} A_N(\mathbf{1}_E)(x) \geq \delta$, where $\delta = \frac{6}{\pi^2}$. This was the best value of δ known so far. In this talk, we will show that the same conclusion holds when δ is taken to be 1. Such divergence behavior of a sequence is known as 'strong sweeping out' property. (Received January 21, 2022)