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David Ralston* (spetzo@hotmail.com), Rice Univ. Math Dept. MS 136, 6100 S. Main St., Houston, TX 77005. **Heaviness and Symbolic Dynamics**. Preliminary report.

The notion of *heaviness* is a natural and intuitive approach to studying dynamical properties of \mathbb{Z} -actions, based on the desire for Birkhoff sums to maintain certain bounds for all time. Namely, for an integrable function f on our space, where T preserves the measure μ , what can we say about the set of points x (called *heavy*) such that:

$$\sum_{i=0}^{N-1} f(T^i x) \geq N \int_X f d\mu$$

for all $N \geq 1$?

After presenting basic definitions and existence theorems, we develop certain examples from symbolic dynamics. The Morse-Thue sequence is given by:

$$x_0 x_1 x_2 \dots = 01101001 \dots$$

This sequence (generated by $A \rightarrow A\bar{A}$) is useful for dispelling common initial misconceptions about heaviness. Having acquainted ourselves with the initial ideas, we will sketch through an equivalent definition for Sturmian sequences in terms of heaviness. These topics are being developed under the supervision of professor Michael Boshernitzan. (Received July 23, 2007)