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Narad Rampersad* (narad.rampersad@gmail.com). *Some properties of a Rudin–Shapiro-like sequence*. Preliminary report.

We introduce the sequence $(i_n)_{n \geq 0}$ defined by $i_n = (-1)^{\text{inv}_2(n)}$, where $\text{inv}_2(n)$ denotes the number of inversions (i.e., occurrences of 10 as a scattered subsequence) in the binary representation of n . We show that this sequence has many similarities to the classical Rudin–Shapiro sequence. If we let $S(n)$ denote the n -th partial sum of the sequence $(i_n)_{n \geq 0}$, then $S(n) = \sqrt{n}G(\log_4(n))$, where G is a bounded, periodic function with period 1. We establish that the maximum and minimum values of G are $\sqrt{2}$ and $\sqrt{3}/3$ respectively. We also give some combinatorial properties of the sequence $(i_n)_{n \geq 0}$. This is joint work with Philip Lafrance, Hamoon Mousavi, Jeffrey Shallit, and Randy Yee. (Received July 31, 2014)