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Monroe B Eskew*, 340 Rowland Hall, UC Irvine, Irvine, CA 92617. *Ulam's measure problem, saturated ideals, and cardinal arithmetic.*

Following the discovery that the continuum cannot be a measurable cardinal, Ulam asked, can it be in some sense close to measurable? Is there a "small" collection of countably complete, two-valued measures that collectively measure all subsets of \mathbb{R} , and how small? Unknown to Ulam at the time, this question turned out to depend on the consistency of strong set-theoretic principles that far eclipse measurable cardinals.

We explore versions of Ulam's question on different cardinals. On \aleph_1 , a positive answer has several equivalent formulations, and we explore whether these equivalences generalize to other cardinals. We show that some of them persist under the Generalized Continuum Hypothesis, while others do not. In the course of this, we generalize a consistency result of Woodin using very large cardinals, employ the recently published Duality Theorem of Foreman in essential ways, and draw surprising connections with the Suslin Hypothesis. (Received September 17, 2013)