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Leading digit laws on Linear Lie Groups.

We study the leading digit laws for the matrix entries of a linear Lie group G . For non-compact G , these laws generalize the following observations: (1) the normalized Haar measure of the Lie group \mathbb{R}^+ is dx/x and (2) the scale invariance of dx/x implies the distribution of the digits follow Benford's law. Viewing this scale invariance as left invariance of Haar measure, we see either Benford or power law behavior in the significands from one matrix entry of various such G . When G is compact, the leading digit laws we obtain come as a consequence of digit laws for a fixed number of components of a unit sphere. The sequence of digit laws for the unit sphere exhibits periodic behavior as the dimension tends to infinity. (Received September 22, 2015)