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Kelly Isham*, kisham@colgate.edu, and **Nathan Kaplan**. *On the proportion of subrings of corank at most k in \mathbb{Z}^n .*

Subgroups in \mathbb{Z}^n are well-understood. It is known that for any k , a positive proportion of subgroups have corank k , and that subgroups of corank k grow sparse as k increases. Much less is known about subrings in \mathbb{Z}^n . In this talk, we consider *subrings* in \mathbb{Z}^n of corank k . We define a zeta function that carries information about the number of subrings in \mathbb{Z}^n of a fixed index and corank at most k . We express these corank zeta functions for \mathbb{Z}^n when $n \leq 4$ in terms of simpler Euler products. In contrast to the case of subgroups, we show that the proportion of subrings with corank k for many k is 0. This is joint work with Nathan Kaplan. (Received January 21, 2022)