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**Austin Neil Anderson\*** (aanderso@math.fsu.edu). *Asymptotics of Best Packing and Best Covering on Self-Similar Fractals.*

"Poppy-Seed Bagel Theorems" are a suite of results which establish existence of asymptotics for minimal Riesz  $s$ -energy, maximal Riesz  $s$ -polarization, best packing, and best covering in the presence of smoothness assumptions on an underlying compact set  $A$ . Researchers used dependent self-similar fractals with equal contraction ratios to show that these asymptotes do not exist for non-smooth sets. But the behavior of these quantities on self-similar fractals is interesting in its own right, and may, for instance, ultimately lead to some notion of densest sphere packings ratios in non-integer dimensions. For instance, in the 1970's, mathematician Steven P. Lalley showed that *independent* self-similar fractals fully preserve the conclusions of the Poppy-Seed Bagel Theorem for best packing and best constrained covering, while exhibiting non-integer dimensions. We build on the prior negative result to show that independence is not only sufficient, but also *necessary* for existence of asymptotics for best packing and best covering on self-similar fractals. Particularly, we establish separation between some explicit subsequences in the full dependent case. This is a joint work with Alexander Reznikov, Oleksandr Vlasiuk, and Edward White. (Received September 21, 2021)