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Ben Briggs, Srikanth Iyengar, Janina Letz and Josh Pollitz* (pollitz@math.utah.edu),
University of Utah, 155 1400 E, JWB 130, Salt Lake City, UT 84112. *A characterization of relative complete intersections.*

Broadly speaking, the goal of this talk is to discuss how ring theoretic information is captured in terms of derived categories and illustrate applications from this perspective. The starting point is the celebrated Auslander-Buchsbaum-Serre theorem which can be phrased in the following way: A local ring is regular if and only if each object of its bounded derived category is a small object; this solved the localization problem for regular rings. An analogous characterization for complete intersections was established by Dwyer-Greenlees-Iyengar and P. for local complete intersections in terms of “proxy small objects;” similarly, this provided a solution to the localization problem for complete intersections. In this talk, we briefly review these points and discuss new work that characterizes when a surjective ring map is complete intersection (i.e., its kernel is generated by a regular sequence), which is in terms of how the proxy small objects ascend along the ring map. Applications of this characterization include a simpler proof of the factorization theorems for relative complete intersections. This talk is based on joint work with Ben Briggs, Srikanth Iyengar and Janina Letz. (Received August 17, 2020)