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**Alexi Block Gorman\*** (atb2@illinois.edu). *Companionability dichotomy for the expansion of an o-minimal theory by a dense, divisible subgroup*. Preliminary report.

Recent works on companionability have established natural and broad criteria concerning the existence of model companions and the preservation of certain neostability properties when passing to the model companion. In this talk, I restrict my attention to the o-minimal setting because in doing so we can isolate the sort of necessary and sufficient condition that is elusive in the more general settings that have been considered. The central result is a full characterization for when the expansion of a complete o-minimal theory by a unary predicate that picks out a dense, divisible subgroup has a model companion. We provide examples both in which the predicate is an additive subgroup, and where it is a multiplicative subgroup. The o-minimal setting allows us to provide a full and geometric characterization for companionability, with a very elegant dividing line when the group operation is multiplication. We conclude with a brief discussion of neostability properties, and give examples that illustrate the lack of preservation for properties such as strong, NIP, and  $\text{NTP}_2$ , though there are also examples for which some or all three of those properties hold. (Received February 02, 2020)