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**Chloe I. Avery, Caitlyn Booms, Timothy M. Kostolansky, S. Loepp and Alex Semendinger\*** (aps5@williams.edu). *How Noncatenary Can a Local UFD Be?* Preliminary report.

We say a ring  $R$  is *catenary* if its prime ideal structure satisfies a nice property: given any two prime ideals  $P \subset Q$  of  $R$ , all saturated chains of prime ideals between  $P$  and  $Q$  have the same length. In general, it is hard to construct examples of rings that are not catenary, and it is especially hard to do so if the rings satisfy other “nice” properties. For instance, it was not until 1993 that Raymond C. Heitmann constructed an example of a Noetherian local unique factorization domain. It was unknown whether there was a limit to “how noncatenary” a Noetherian local UFD could be. In this talk, we answer this question, based on research done at the SMALL REU at Williams College in 2017. (Received August 11, 2017)