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Bruno Benedetti* (bruno@math.miami.edu), Department of Mathematics, 1365 Memorial Drive, Coral Gables, FL 33146. *A random model for algebraic curves, with a threshold for Cohen-Macaulayness.* Preliminary report.

A problem in introducing random models in commutative algebra, is that natural properties like Cohen-Macaulayness end up being unlikely. We sketch a curious random model in which there is a natural probabilistic threshold for Cohen-Macaulayness. Given a graph G , one can construct an algebraic curve C with dual graph G , with the property that G is connected if and only if C is arithmetically Cohen-Macaulay. So if we start with an Erdős-Rényi graph $G=G(n,p)$, the construction gives a "random curve $C=C(n,p)$ " dual to it; and this curve has an obvious threshold for arithmetic Cohen-Macaulayness, given by Erdős-Rényi's theorem. If time permits, we sketch how the Linial-Meshulam model of random 2-complexes yields a notion of "random algebra" with a threshold for having depth at least 3. (This relies on work with Di Marca and Varbaro). (Received September 25, 2017)