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The expected jaggedness of order ideals.

The jaggedness of an order ideal I in a poset P is the number of maximal elements in I plus the number of minimal elements of P not in I . A probability distribution on the set of order ideals of P is toggle-symmetric if for every p in P , the probability that p is maximal in I equals the probability that p is minimal not in I . In this paper, we prove a formula for the expected jaggedness of an order ideal of P under any toggle-symmetric probability distribution when P is the poset of boxes in a skew Young diagram. Our result extends the main combinatorial theorem of Chan-López-Pflueger-Teixidor, who used an expected jaggedness computation as a key ingredient to prove an algebro-geometric formula for the genus of the Brill-Noether curve; and it has unexpected applications to homomesies, in the sense of Propp-Roby, of the antichain cardinality statistic for order ideals in posets under rowmotion and gyration. (Received August 29, 2015)