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On Knots That Divide Ribbon Knotted Surfaces

We define a knot to be half ribbon if it is the cross-section of a ribbon 2-knot, and observe that ribbon implies half ribbon implies slice. We introduce the half ribbon genus of a knot K, the minimum genus of a ribbon knotted surface of which K is a cross-section. We compute this genus for all prime knots up to 12 crossings, and many 13-crossing knots. The same approach yields new computations of the doubly slice genus. We also introduce the half fusion number of a knot K, that measures the complexity of ribbon 2-knots of which K is a cross-section. We show that it is bounded from below by the Levine-Tristram signatures, and differs from the standard fusion number by an arbitrarily large amount.