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Title: Short decompositions and joint crossings of embedded graphs on surfaces

Abstract: The joint crossing number of two graphs G_1 and G_2 embedded on a surface is the minimum number of crossings among all homeomorphic reembeddings of one of the graphs. An old and still wide-open conjecture of Negami states that this crossing number is always $O(|E(G_1)||E(G_2)|)$. In this talk, we will discuss this conjecture and survey some progress, starting with a geometric approach using shortest path embeddings (with Hubard, Kaluza and Tancer), leading to even more open problems, and ending with recent results with Fuladi and Hubard obtaining tight bounds when one of the graphs is a non-orientable canonical system of loops.