Dynamics of Darboux curves on surfaces

(joint work with Ronaldo Garcia and Remi Langevin)

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Abstract

In 1872 [Da], Gaston Darboux defined a family of curves on surfaces in the 3-dimensional Euclidean space $\mathbb{E}^3$ which are preserved by the action of the Möbius group and share many properties with geodesics: A curve C on a surface S in $\mathbb{E}^3$ is called a *Darboux curve* whenever all the osculating spheres of C are tangent to S. We shall describe the generic behavior ("zig-zag" and "beak-to-beak") of Darboux curves near ridge points of general surfaces and the dynamics of the Darboux curves on particular surfaces (canal surfaces, quadrics and certain cyclides).

References

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