Mathematics > Analysis of PDEs

On the Characteristic Curvature Operator

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We introduce the Characteristic Curvature as the curvature of the trajectories of the hamiltonian vector field with respect to the normal direction to the isoenergetic surfaces and by using the Second Fundamental Form we relate it to the Classical and Levi Mean Curvature. Then we prove existence and uniqueness of viscosity solutions for the related Dirichlet problem and we show the Lipschitz regularity of the solutions under suitable hypotheses. Moreover we prove a non existence result on the balls when the prescribed curvature is a positive constant. At the end we show that neither Strong Comparison Principle nor Hopf Lemma do hold for the Characteristic Curvature Operator.

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