

INEQUALITIES FOR CHEN'S DELTA-INVARIANTS

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Abstract: In the early nineties, B.Y. Chen introduced an invariant for Riemannian manifolds and proved an inequality involving these so-called delta-invariant for submanifolds of real space forms. As a consequence he obtained new obstructions for Riemannian manifolds in order to allow a minimal immersion into some Euclidean space. Soon after that it was proved that similar inequalities are valid for Lagrangian submanifolds of complex space forms. Many results classifying submanifolds realising equality in the basic inequality were proved by many authors. There were two directions of generalisations. Oprea proved an improvement of the original inequality for Lagrangian submanifolds. Chen introduced generalised delta-invariants and proved inequalities for these invariants. Chen and Dillen improved these inequalities for Lagrangian submanifolds similar to Oprea's improvement. Unfortunately, the original proof of Chen-Dillen had an error, and in order to correct it, an additional condition had to be imposed. Recently, Chen-Dillen-Van der Veken-Vrancken found a proof that settled the problem. There are many classification results for submanifolds realizing the equality, but in this talk we will focus on the inequality.