DECOMPOSITION OF NORMAL CURRENTS IN CODIMENSION 1

EMANUELE TASSO

ABSTRACT. The decomposition problem of a Normal Current was first stated by F. Morgan, in a paper collecting some open problems in Geometric Measure Theory. The question was if every k-Normal Current admits decomposition (in a suitable sense) by Rectifiable Currents of the same dimension ($1 \leq k \leq (n-1)$).

I will state the main theorem, that gives a positive answer to Morgan problem in codimension 1. As a corollary, one gets that *every* $(n-1)$ regular vector-field admits a "weak-foliation" by $(n-1)$ rectifiable sets.

Finally, in a certain sense, this result is optimal, thanks to the so-called "Zworski counter-example". This counter-example shows that no such decomposition into Integer Currents holds for generic $(n-1)$ Normal Currents.

This is the main content of my Master Thesis held at the University of Pisa, with Professor Giovanni Alberti.

PHD STUDENT, SISSA SCUOLA INTERNAZIONALE SUPERIORE DI STUDI AVANZATI, TRIESTE
E-mail address: etasso@sissa.it