

Intersection theory from the perspectives of the generalized Lelong numbers

Việt-Anh Nguyễn*

Abstract:

We address the following problem:

Let T_1 and T_2 be two positive closed currents on a compact Kähler manifold X . When are they wedgeable? And what is their intersection? More concretely, we want to know when and how one can define a reasonable wedge-product $T_1 \wedge T_2$?

In 2018 Tien-Cuong Dinh and Nessim Sibony introduced a notion of wedge-product which is based on their theory of tangent currents for positive closed currents. This seems to be the most general notion of intersection of positive closed currents up to now. On the other hand, our recent work in 2021 introduced a new concept of the generalized Lelong numbers $\nu_j(T, V)$, where T is a positive plurisubharmonic current in a complex manifold X , and V is a submanifold in X . In general, we have $\dim V + 1$ generalized Lelong numbers associated to T along V . The classical case where V is a single point $x \in X$ corresponds to $\dim V = 0$.

In this talk we give an effective sufficient condition (in terms of the generalized Lelong numbers) ensuring that T_1 and T_2 are wedgeable in the sense of Dinh-Sibony.

Keywords: positive (plurisubharmonic/closed) current, tangent current, generalized Lelong numbers, wedge-product.

¹ Université de Lille,
Laboratoire de mathématiques Paul Painlevé,
CNRS U.M.R. 8524,
59655 Villeneuve d'Ascq Cedex, France.
<https://pro.univ-lille.fr/viet-anh-nguyen/>
Viet-Anh.Nguyen@univ-lille.fr