

## **Research Highlight: Complex Hénon maps in higher dimension**

### **Work of Professor DINH Tien Cuong**

Real Hénon maps were introduced by Michel Hénon as a simplified model for the Poincaré section of the Lorenz model. The associated dynamical systems exhibit chaotic behavior and are among the most challenging dynamical systems. 2D-complex Hénon maps were studied by many researchers: E. Bedford, T.-C. Dinh, J.-E. Fornæss, M. Lyubich, N. Sibony, J. Smillie. In higher dimension, the dynamics becomes much richer. The lack of tools has been a central difficulty. During the last decade, Prof. Dinh Tien-Cuong and his collaborator Prof. Nessim Sibony developed a theory of super-potentials and a theory of intersection for positive closed currents which allow them to prove fundamental properties of these maps. They satisfy one of the strongest ergodic properties: the maximal entropy measure is exponentially mixing. The Julia set of a Hénon map also satisfies a strong uniqueness ergodic property and the saddle periodic points are equidistributed, according to the maximal entropy measure.

#### **References:**

- Dinh T.-C., Sibony N., Super-potentials of positive closed currents, theory of intersection and dynamics. *Acta Math.* 203 (2009), no. 1, 1-82.
- Dinh T.-C., Sibony N., Equidistribution of saddle periodic points for Hénon-type automorphisms of  $\mathbb{C}^k$ . *Math. Ann.* 366 (2016), no. 3-4, 1207-1251.