Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)
Vol. XXIV (2023), 927-954

Moser-Trudinger inequalities and complex Monge-Ampère equation

TIEN-CUONG DINH, GEORGE MARINESCU, AND DUC-VIET VU

Abstract. We present a version of the Moser-Trudinger inequality in the setting of complex geometry. As a very particular case, our result already gives a new Moser-Trudinger inequality for functions in the Sobolev space $W^{1,2}$ of a domain in $\mathbb{R}^2$. We also deduce a new necessary condition for the existence of a Hölder continuous solution of the complex Monge-Ampère equation with right-hand side a given measure on a compact Kähler manifold.

Mathematics Subject Classification (2020): 32Uxx (primary); 32W20, 46E35 (secondary).