İSTANBUL ANALYSIS SEMINARS

m-SUBHARMONIC FUNCTIONS

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Abstract: A potential theory for the equation $(dd^c u)^m \wedge \beta^{n-m} = f\beta^n$, $1 \leqslant m \leqslant n$, is developed, where $\beta = dd^c |z|^2$ is the fundamental form in $\mathbb{C}^n$ and f is a positive function or measure. The corresponding notions of m-capacity and m-subharmonic functions are introduced, and their properties are studied.

Note that, the classical potential theory is based on subharmonic functions and Laplace operator Δ. The pluripotential theory constructed in the 1980s is based on plurisubharmonic functions and is related to the Monge-Ampère operator $(dd^c u)^n$. The corresponding operator $(dd^c u)^m \wedge \beta^{n-m}$, called the Hessian operator, is the Laplace operator for $m = 1$ and the Monge-Ampère operator for $m = n$.

Date: April 12, 2013
Time: 15:40
Place: Sabancı University, Karaköy Communication Center
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