1159-35-78 **Alberto Cialdea*** (cialdea@email.it), Dipartimento di Matematica, Informatica ed, Economia, Università della Basilicata, Via dell'Ateneo Lucano, 10, 85100 Potenza, Italy. *Functional dissipativity of second order differential operators with complex coefficients.*

In this talk I will present some recent results obtained with Vladimir Maz'ya. They concern the Dirichlet problem for the second order differential operator $E = \nabla(A\nabla)$, where A is a matrix with complex valued L^∞ entries. We have introduced the concept of dissipativity of E with respect to a given function $\varphi : \mathbb{R}^+ \to \mathbb{R}^+$. This means that

$$Re \int_\Omega \langle A\nabla u, \nabla(\varphi(|u|)\, u)\rangle\, dx \geq 0$$

for any complex valued $u \in \mathring{H}^1(\Omega)$ such that $\varphi(|u|)\, u \in \mathring{H}^1(\Omega)$, Ω being a domain in $\mathbb{R}^N$. Under the assumption that the $Im\, A$ is symmetric, we have proved that the condition

$$|s\, \varphi'(s)|\, |\langle Im\, A(x)\, \xi, \xi\rangle| \leq 2\sqrt{\varphi(s)\, [s\, \varphi(s)]'}\, \langle Re\, A(x)\, \xi, \xi\rangle$$

(for almost every $x \in \Omega$ and for any $s > 0$, $\xi \in \mathbb{R}^N$) is necessary and sufficient for the functional dissipativity of E. (Received July 30, 2020)