UNIVERSITÀ DELLA CALABRIA

DIPARTIMENTO DI MATEMATICA E INFORMATICA

Dipartimento di Matematica e Informatica

Avviso di Seminario

Martedì 01 marzo 2016 – ore 15:30

Aula MT10 – cubo 30B primo piano

prof. Matteo Muratori

Università di Pavia

terrà un seminario dal titolo:

Some symmetry results for optimal functions of Caffarelli-Kohn-Nirenberg inequalities

Abstract:

We investigate the structure of functions that optimize a special family of weighted interpolation inequalities of Caffarelli-Kohn-Nirenberg type. The spatial dimension is greater than or equal to 3 and the weight appearing in L^p norms is an inverse power with exponent between 0 and 2. The non-weighted case, namely when the exponent is zero and Caffarelli-Kohn-Nirenberg inequalities become Gagliardo-Nirenberg inequalities, has thoroughly been investigated by M. Del Pino and J. Dolbeault in a remarkable paper (JMPA, 2002), where they prove that optimal functions coincide with explicit profiles of Aubin-Talenti type. If the exponent ranges strictly between 0 and 2, suitable analogues of Aubin-Talenti-type profiles continue to exist. However, the main issue is related to radial symmetry. Indeed, as soon as one is able to prove that optimal functions are radial, then they are necessarily of Aubin-Talenti type. Because of the weight, standard Schwarz symmetrization techniques fail: we have therefore to exploit a completely different method. First of all, by means of a concentration-compactness analysis, we prove that optimal functions converge to the Aubin-Talenti profiles as the exponent of the power of the weight tends to zero. Then we proceed by contradiction with an argument that involves angular derivatives of possibly non-radial optimal functions. This allows us to show that symmetry holds at least when the exponent is close to zero.

Il Direttore del Dipartimento
prof. Nicola LEONE