University of Macau

Faculty of Science and Technology

Department of Mathematics

Hodge-Dirac Operators in Lp Spaces on Lipschitz Domains

BY

Prof. Alan MCINTOSH, Director of Center of Mathematical Analysis and Applications, Australian National University, Canberra

Date: **28 September 2015 (Monday)**

Time: **10:00 a.m. - 11:00 a.m.**

Venue: **E11- 1012**

Abstract

The Hodge–Dirac operator DH $= d\Omega + d\Omega_*$ on a bounded domain $\Omega \subset R^n$ is self-adjoint in L2 (Ω), and so has bounded resolvents and bounded functional calculi. I shall discuss the question as to when the resolvents and functional calculi are bounded in Lp (Ω) for some range of values of $p \in (pH, pH)$, where $pH < 2 < pH$.

The square of the Hodge–Dirac operator is the Hodge–Laplacian $\Delta H = DH^2$, so it has a bounded functional calculus for the same range of values as DH. But an operator such as the Hodge–Stokes operator, which is the restriction of ΔH to a subspace such as the divergence free vector fields, can have a bounded functional calculus on a larger range of values of p.   I shall discuss recent joint research with Sylvie Monniaux (Marseille) on this topic.

Biography

Alan McIntosh is a famous mathematician who solved, with Coifman and Meyer together, the long standing boundedness problem of the Cauchy singular operator on Lipschitz curves, the so called CMcM theorem. He is also a contributor to the solution of Kato's conjecture. Alan is Fellow of The Australian Academy, was director of Center of Mathematical Analysis and Applications, Australian national University, Canberra. Before that he was Professor at Macquarie University, Sydney.

All are Welcome!

FST Seminar - MAT - " Hodge-Dirac Operators in Lp Spaces on Lipschitz Domains" at 10:00am on 28 September 2015 (Monday), E11-1012