

Spectral stability of differential operators

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Email:

Timetable: 12 hrs. First lecture on January 11, 2016, 11:00, (dates already fixed, see the calendar), Torre Archimede, Room 2BC/30

Course requirements:

Examination and grading:

SSD: MAT/05

Aim:

Course contents:

1. Unbounded closed operators
2. Weak derivatives and the weak Laplacian
3. Sobolev spaces and the Laplacian graph spaces
4. Further properties of the weak Laplacian and the Laplacian graph spaces
5. Classes of open sets
6. Traces of functions in Sobolev spaces
7. Closure of the Dirichlet Laplacian
8. Dirichlet Laplacian on an arbitrary open set
9. Neumann Laplacian on an arbitrary open set
10. Unbounded symmetric and self-adjoint operators
11. Quadratic forms. Friedrichs extensions of non-negative symmetric operators
12. Fractional powers of non-negative self-adjoint operators
13. Spectrum of non-negative self-adjoint operators with compact resolvents
14. Minimax principle for the eigenvalues of non-negative self-adjoint operators with compact resolvents
15. Transition operators. General spectral stability theorems for non-negative self-adjoint operators with compact resolvents
16. Spectral stability of the Dirichlet Laplacian
17. Spectral stability of the Neumann Laplacian
18. Spectral stability of the Robin Laplacian
19. Further spectral stability results