

M4 Functional Analysis and Related Topics

Organiser: Clifford Gilmore, *University of Helsinki*

1. Spectral properties of weighted composition operators on the Bloch and Dirichlet spaces

Ted Eklund, *Åbo Akademi*

In this talk I will discuss the spectra of invertible weighted composition operators uC_φ on the Bloch and Dirichlet spaces. In the Bloch case we obtain a complete description of the spectrum when φ is a parabolic or elliptic automorphism of the unit disc. In the case of a hyperbolic automorphism φ , exact expressions for the spectral radii of invertible weighted composition operators acting on the Bloch and Dirichlet spaces are derived.

2. How close is a Volterra-type integral operator to compact operators?

Santeri Miihkinen, *University of Helsinki*

We consider a Volterra-type integral operator

$$T_g f(z) = \int_0^z f(\zeta) g' \zeta d\zeta,$$

where the functions f and g are analytic functions in the unit disk \mathbb{D} of the complex plane and $z \in \mathbb{D}$. The operator T_g was introduced by Pommerenke in 1970's and it has been studied systematically by several authors including A. Aleman, A.G. Siskakis and R. Zhao among others. In general, people are interested how to characterize the properties of the operator T_g in terms of the 'function-theoretic' properties of the symbol function g . A natural problem is how to obtain a quantitative estimate for the distance of T_g from compact operators in terms of g . We address this problem when the operator T_g is defined on a large class of weighted Bergman spaces A_ω^p where the weight ω satisfies a certain doubling property. This talk is based on joint work with Pekka J. Nieminen from Helsinki and Wen Xu from the University of Eastern Finland.

3. Spectra of weighted composition operators

Ilmari Nieminen, *University of Oulu*

Let ϕ be an automorphism of the open complex unit disc D . For such ϕ , we investigate the spectra of invertible weighted composition operators uC_ϕ acting on a wide class of analytic function spaces; this class contains, for example, Hardy spaces $H^p(D)$, weighted Bergman spaces $A_\alpha^p(D)$, and weighted Banach spaces of H^∞ -type.

4. The spectra of linear fractional composition operators on weighted Hardy spaces

Riikka Schroderus, *University of Helsinki*

We complete the picture concerning the spectra of composition operators induced by linear fractional self-maps of the unit disc on certain type of weighted Hardy spaces. In particular, we compute the spectra of the composition operator acting on some scales of weighted Hardy spaces defined on the unit disc when the inducing map is a hyperbolic or parabolic disc automorphism or a parabolic non-automorphism of the unit disc.