October 5, 2018

Hosted by:
Prof. Carl Cowen

Tea begins at 2:30
in LD 259

Research Topic
begins at 3:00
in LD 229

## On Bishop operators: looking for "easy" counterexamples to the Invariant Subspace Problem

### ABSTRACT:

Bishop operators $T_a$ were proposed by E. Bishop in the fifties as candidates for operators having no non-trivial closed invariant subspaces, or in other words, operators which might entail counterexamples for the Invariant Subspace Problem. Nevertheless, in 1974 Davie showed that Bishop operators have non-trivial invariant closed subspaces for almost all $a$. Moreover, he showed they do have even hyperinvariant closed subspaces (closed subspaces invariant under every operator commuting with $T_a$). Later on, in 1991, MacDonald proved that a wide class of Bishop-type operators $T_{w,a}$ have non-trivial hyperinvariant closed subspace, but it is still an open problem nowadays whether all Bishop operators have non-trivial invariant closed subspaces. In this talk, we will introduce them, recall some of their properties and prove that they are power-regular operators; a common feature with compact, normal or decomposable operators. More precisely, we will compute the local spectral radius of any non-zero vector in the space and establish connection to the behavior of the restriction of $T_a$ to any non-trivial closed invariant subspace (in case they do exist).
Joint work with Miguel Monsalve-López (UCM-ICMAT).

### ABOUT THE SPEAKER:

Eva A. Gallardo-Gutiérrez obtained her PhD degree in 2000 at Universidad de Sevilla in Spain. Since that time, she has been a research visitor at several universities, including visits to Michigan State University, Purdue University West Lafayette, University of Michigan Ann Arbor, University of Leeds (London Mathematical Society visitor), Bucknell University in Lewisburg, PA (Distinguished Visiting Professor), and she is currently visiting Indiana University, Bloomington. She was Profesora Asociada at Universidad de Cadiz (1996-2003) and moved to a permanent position at Universidad de Zaragoza (2003-2009) where she was also a member of the research institute IUMA (Institute Universitario de Matematicas y Aplicaciones). Since 2009, she has been Profesora Titular at Universidad Complutense de Madrid. In addition, Eva is a member of the research center Instituto de Ciencias Matematicas located north of Madrid. Gallardo's main research contributions have been in Complex Analysis and Operator Theory with particular interests in the study of cyclic behavior and invariant subspaces for operators on Hilbert spaces.

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