

CCSU  
DEPARTMENT OF MATHEMATICAL SCIENCES

# COLLOQUIUM

Friday, October 8  
3:00 – 4:00 PM  
Maria Sanford, Room 101

## THE OCTONIONS, F4 AND A GROUP OF 3 x 3 MATRICES

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**Abstract:** The set of Hermetian matrices over the octonions is not closed under matrix multiplication. However, it is closed under the symmetrized “Jordan product”  $1/2(AB+BA)$ , resulting in the “exceptional Jordan algebra”. The exceptional semi-simple Lie group F4 is the automorphism group of this algebra. It is a subgroup of the rotation group on the 27 independent components of this algebra. We will review some of the properties of F4 and take a detour to examine a fascinating group of 3x3 matrices that appears related (though not necessarily a subgroup of F4). It is an easily-defined non-abelian solvable group where the Lie algebra structure extends to the whole group.

**To join us online use the following link:**

<https://ccsu.webex.com/meet/gotchev>

**For further information:**

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