

COLLOQUIUM
CENTER FOR APPLIED MATHEMATICS AND SCIENCE
DEPARTMENT OF MATHEMATICS
UNIVERSITY OF WEST GEORGIA

10:00 AM, TUESDAY, SEPTEMBER 29, 2015, BOYD 306

Speaker: **Dr. Dinh Trung Hoa**
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Title: **Some new results on AGM inequalities for matrices**

Abstract:

The AGM inequality is well-known for non-negative numbers and still holds true for positive definite matrices. In this talk, we prove some general reverse AGM inequalities for matrices. Moreover, we also show that the generalized reverse Cauchy inequality and the generalized Powers-Stormer inequality hold with respect to unitarily invariant norms under some condition. Finally, we give a new characterization of operator monotone functions by a reverse AGM inequality. More precisely, it is shown that if for any positive definite matrices A, B the following inequality

$$f\left(\frac{A+B}{2}\right) \leq f\left(A\sharp B + \frac{1}{2}A^{1/2}|I - A^{-1/2}BA^{-1/2}|A^{1/2}\right)$$

holds (where $A\sharp B = A^{1/2}(A^{-1/2}BA^{-1/2})^{1/2}A^{1/2}$ is the geometric mean of A and B), then the function f is operator monotone on $[0, \infty)$.

This talk is based on joint works with Prof. H. Osaka and Dr. Vo T.B. Khue.

All are welcome.