



# THE UNIVERSITY OF CHICAGO

## COMPUTATIONAL AND APPLIED MATHEMATICS COLLOQUIUM

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CHEN GREIF

Department of Computer Science  
The University of British Columbia

### Iterative Solution of Saddle-Point Linear Systems

THURSDAY, May 31, 2018, at 5:00 PM  
Jones 226, 5747 South Ellis Avenue

#### ABSTRACT

The need to iteratively solve large and sparse saddle-point linear systems is a challenging task in numerical linear algebra. In this talk we will discuss iterative solution techniques, including new preconditioners that accelerate the iterative process. We will show that under specific assumptions on the rank of the block matrices involved, the inverse has unique mathematical properties and it is possible to efficiently approximate null spaces and use them to rapidly solve the problem. Numerical examples related to numerical solution of partial differential equations and constrained optimization problems illustrate our findings.

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#### Organizers:

Risi Kondor, Departments of Computer Science and Statistics, [risi@galton.uchicago.edu](mailto:risi@galton.uchicago.edu)

Lek-Heng Lim, Department of Statistics, [lekheng@galton.uchicago.edu](mailto:lekheng@galton.uchicago.edu)

Jonathan Weare, Department of Statistics and The James Franck Institute, [weare@uchicago.edu](mailto:weare@uchicago.edu).

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