

# Matrix Computations and Scientific Computing Seminar

Organizer: J. Demmel and M. Gu

Wednesday, 12:00–1:00 pm, 380 Soda Hall

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Oct 19      **Alex Rusciano**, UC Berkeley

*The HBL Lower Bounds*

We will examine the application of the discrete Holder-Brascamp-Lieb inequalities to the design of communication optimal algorithms. In particular, we will describe optimal tiling (blocking) strategies for nested loops that lack data dependencies and exhibit linear memory access patterns. We attain known lower bounds for communication costs by unraveling the relationship between the HBL primal LP, its dual, and tile selection. The methods used are constructive and algorithmic.