DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
ODENSE UNIVERSITY

COMPUTER SCIENCE COLLOQUIUM

An Introduction to Matroids, Oriented Matroids, and Linear Programming

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The Seminar Room

Abstract: A matroid is an axiomatically defined combinatorial structure, and so is an oriented matroid. Both, in very different ways, are closely related to linear programming.

We will see how general matroids are algorithmically nice by being essentially the same as certain *special* systems of linear inequalities. We will see how oriented matroids (special as matroids) are an abstraction of *general* systems of linear inequalities which helps us to discover and derive algorithmically useful linear inequality theory.

To a large extent, "linear inequality theory" means "Farkas Lemma", which we study in some depth. From an especially simple oriented-matroid proof of Farkas lemma, we obtain a new linear programming pivot method, which remains to be tested.

[This is part two of a talk in two parts]

Bjarne Toft