

**February 2009**

**MADALGO seminar by Peyman Afshani, Aarhus University**

**Optimal Halfspace Range Reporting in 3-d**

Abstract:

Halfspace range reporting is a data structure problem in computational geometry where we are to preprocess an input set of point in a data structure that is capable of answering the following queries: report all the points inside a given halfspace.

This fundamental problem has been studied for more than 25 years, and during this time many efficient solutions were given for the problem in three dimensions, but unfortunately none of them was optimal. In this talk, after a brief introduction to the problem, we will describe a recent simple idea which allows us to obtain the first optimal data structure for this problem. We will also investigate the implications of our techniques in higher dimensions and in the I/O model.

Joint work Timothy Chan.