

MATH 4/5779: Math Clinic (Fall 2009)
Optimizing Electrical Wiring and Box Placement
Sponsored by: United Launch Alliance

Instructors: Stephen Billups and Mike Jacobson
Class Meetings: Mon/Wed 2:30-3:45p.m.

Students, we have a problem...

A difficult task in designing launch vehicles is to determine where electrical boxes and other devices should be placed to

- minimize the amount of interconnecting wiring
- keep the vehicle well-balanced,
- avoid excessive thermal loading,
- avoid excessive vibrations, and
- keep redundant components well separated.



...Can you help us solve it?

In this Math Clinic, we will develop solution techniques for solving this problem. But it won't be easy. This is a computationally challenging (NP-Hard) problem. To solve it, we will draw upon the latest advances in combinatorial optimization, and tailor them to this specific problem.

To participate, sign up for (Math 4779 or Math 5779, Section 002.)

For more information, including a detailed problem description, visit <http://math.ucdenver.edu/~billups/courses/clinicF09/> or contact Steve Billups (Stephen.Billups@ucdenver.edu, (303) 556-4814) or Mike Jacobson (Michael.Jacobson@ucdenver.edu, (303) 556-6270).

The Mathematics Clinic is a 3-credit course intended to give students practical experience applying mathematics to solve real-world problems. The clinic is conducted as a research team, with students and faculty working together to solve a problem of interest to a sponsoring corporation or government agency. Students should have a strong mathematical or technical background, but need not be mathematics majors.