

MECHANICS COLLOQUIUM



Wednesday, April 9, 2008
14:00-14:45 h.

Delft University of Technology
Faculty 3mE/Mechanical Engineering
Mekelweg 2, Delft
Lecture Room F

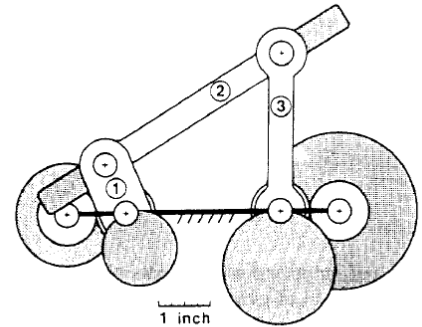


Figure 9. Fully balanced four-bar linkage.

Counterweight balancing: determining limits of performance through convex optimization techniques

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Abstract – Over the last few decades, numeric optimization has become a major tool for obtaining better engineering designs. This numerical technique appeals to designers for it allows finding a design that optimizes some objective criterion (cost, performance, weight,...) and satisfies all hard design constraints simultaneously.

Recently, several successful software products have emerged that have brought numeric optimization within reach of the industrial designer. These products offer, besides a user-friendly interface, a number of standard algorithms for solving numeric optimization problems, such as the well-known genetic algorithms.

Although these software products may incrementally improve existing engineering designs, they generally do not allow finding the globally optimal design. In this talk, on the other hand, we are going to show that in the area of counterweight balancing of high-speed mechanisms, it is possible to find globally optimal designs (and hence performance limits) extremely fast through the application of insights from the domain of convex optimization.

About the speaker – [Myriam Verschuure](#) is currently a doctoral student at the Mechanical Engineering department of the Katholieke Universiteit Leuven, Belgium, working on counterweight balancing of mechanisms using convex optimization techniques. She has her degrees from the same department (in 2003) and hopes to get her PhD in December 2008.

Local host – Just Herder.