



A CANON COMPANY

Modeling out of plane displacements in sheets of paper

Can you extend existing mathematical tools to solve this puzzle?

Department description

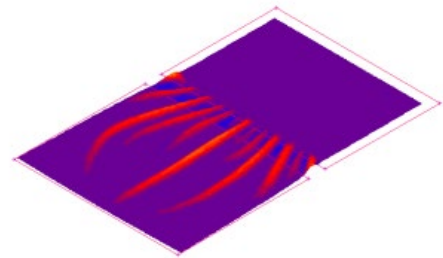
You will be working at the Analysis & Measurements Department together with ca. 10 colleagues. We support our product development by, among others, designing, building and calibrating new measurement methods.

Assignment

When a sheet of paper is wetted partially, it may show out of plane displacements (see fig.). Different amounts of wetting, of course, cause different amounts of wrinkling and, moreover, different patterns of wrinkling. In printing devices the amount of out of plane displacements influences the print quality that can be achieved and therefore we are interested in modeling of out of plane displacements, regardless of the pattern.

Prediction of the out-of-plane deformations of a thin sheet that is pressed onto a rigid surface due to partial (hygro)expansion is a challenging task from a scientific computing point of view, because it combines:

- the non-linearity of buckling
- the non-linearity of contact
- high tensile stiffness in the plane and low bending stiffness of the sheet
- large differences in the in-plane dimensions of the sheet compared to its thickness
- inhomogeneity of the moisture content in the sheet



In this assignment you will, using cutting-edge mathematical theories and tools, investigate options to create a new simulation tool that can handle the complexity of this modelling challenge in a reliable way.

Your profile

- Studying Applied Mathematics, Applied Physics, Mechanical Engineering or equivalent
- Have an interest in the mechanisms that cause materials to deform
- Dare to take up the challenge to solve a complicated mathematical puzzle
- Looking for a challenging assignment with a focus on applied science

Our offer

- A challenging assignment with skilled coaching
- Graduation fee up to euro 450 per month
- Travel cost compensation or room rent compensation up to euro 225 per month

Interested?

Are you interested in this assignment? Please click on the button 'apply now' at the top on the page where you can upload your resume and motivation letter.

If you would like to receive more information about this assignment, please contact

Jos Maubach, tel. +31 (0)40 247 4358, email J.M.L.Maubach@tue.nl

or Louis Saes tel. +31 (0)77 359 3414, email louis.saes@oce.com