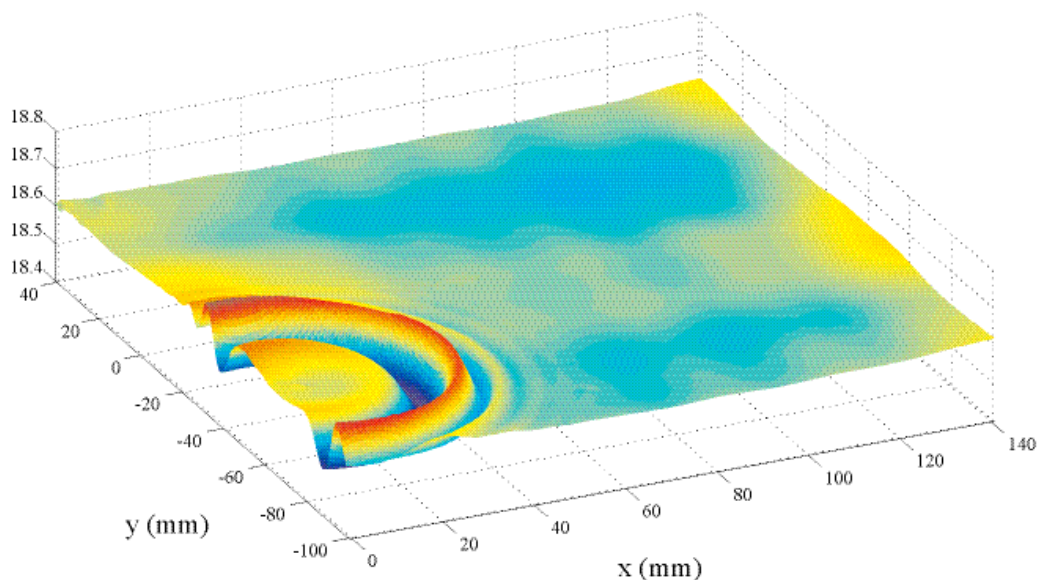


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We propose a method to measure the deformation of coating films by optical means. A screen printed with a pattern of random dots is placed above the coated film, and is visualised from below through the film. A cross correlation of the distorted image of the screen with a reference image is performed using a commercial PIV (Particle Image Velocimetry) software, yielding the apparent displacement field. The instantaneous topography of the film is obtained by integrating this displacement field, which allows for a follow in time of the coating process. The validity conditions for the integration, the resolution and the precision of the technique will be discussed. The resolution can be improved by increasing the distance between the screen and the film. In principle the method could be used with non-transparent substrates or opaque fluids by reflection of the dotted screen.



Example of reconstruction of liquid surface soon after a water drop collision. The mean water height is 18.6 mm, maximum wave amplitude is 0.1 mm. Vertical resolution is 2 μm and horizontal resolution is 0,6 mm.

References:

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