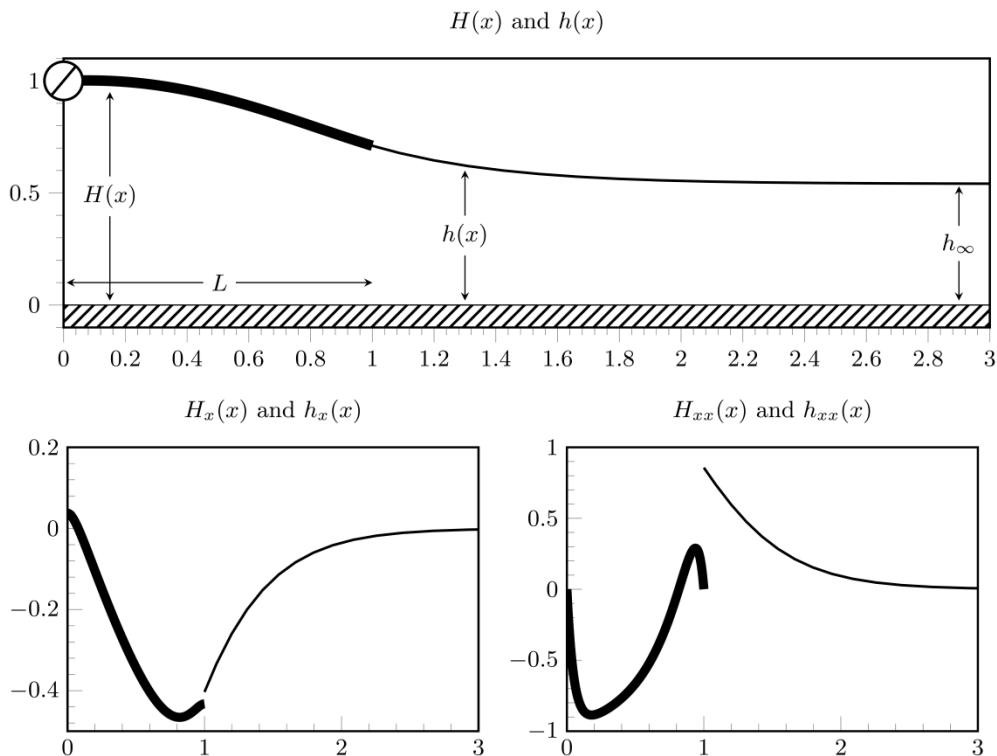


**FINAL REPORT ON UK FLUIDS NETWORK SRV BY PROFESSOR STEPHEN WILSON
(UNIVERSITY OF STRATHCLYDE) TO UNIVERSITY OF BATH IN JUNE 2018**

The purpose of this Short Research Visit (SRV) was to support an academic visit by the proposer, Professor Stephen Wilson (University of Strathclyde), to the University of Bath to collaborate with Dr Phillippe Trinh on a challenging elastocapillary fluid-structure interaction problem. Specifically, we worked on understanding the steady-state configuration of a pinned deformable elastic plate lying on the free surface of a thin film of viscous fluid that is driven by the motion of a solid substrate below to the right with uniform speed. This is exactly what we did between Wednesday 20th and Friday 29th June 2018, with the added bonuses of a flying visit to Oxford for Professor Sam Howson's 60th Birthday Workshop and being able to attend the final day of the UK Fluids Network Special Interest Group on Fluid Dynamics of Liquid Crystalline Materials Workshop on "Nematics at the Meeting Point of Solid Mechanics and Fluid Dynamics: New Perspectives and Challenges" held at the University of Bath. Scientifically the visit was very productive, and we are currently putting the finishing touches to a manuscript describing the results of our investigations. For example, as the numerically calculated results shown in the figure below illustrate, the behaviour of the solution near the end of the plate is unexpectedly complicated, and, in particular, boundary-layer effects (which are expected to be generic for a wide class of singly perturbed elastocapillary problems) emerge in the asymptotic limit of a highly flexible plate. More generally, we hope that the results we have obtained will be of interest to the growing body of national and international researchers working on a wide range of elastocapillary problems.



Numerically computed heights of the elastic plate (shown with the thick line) and the free surface of the fluid film (shown with the thin line) and their derivatives, illustrating the unexpectedly complicated behaviour of the solution near the end of the plate.