



Berlin
Mathematical
School

BMS Friday Colloquium

Friday 1 June 2018 at 14:15

Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Fatiha Alabau-Boussouira

(U Lorraine / LJLL at Sorbonne U)

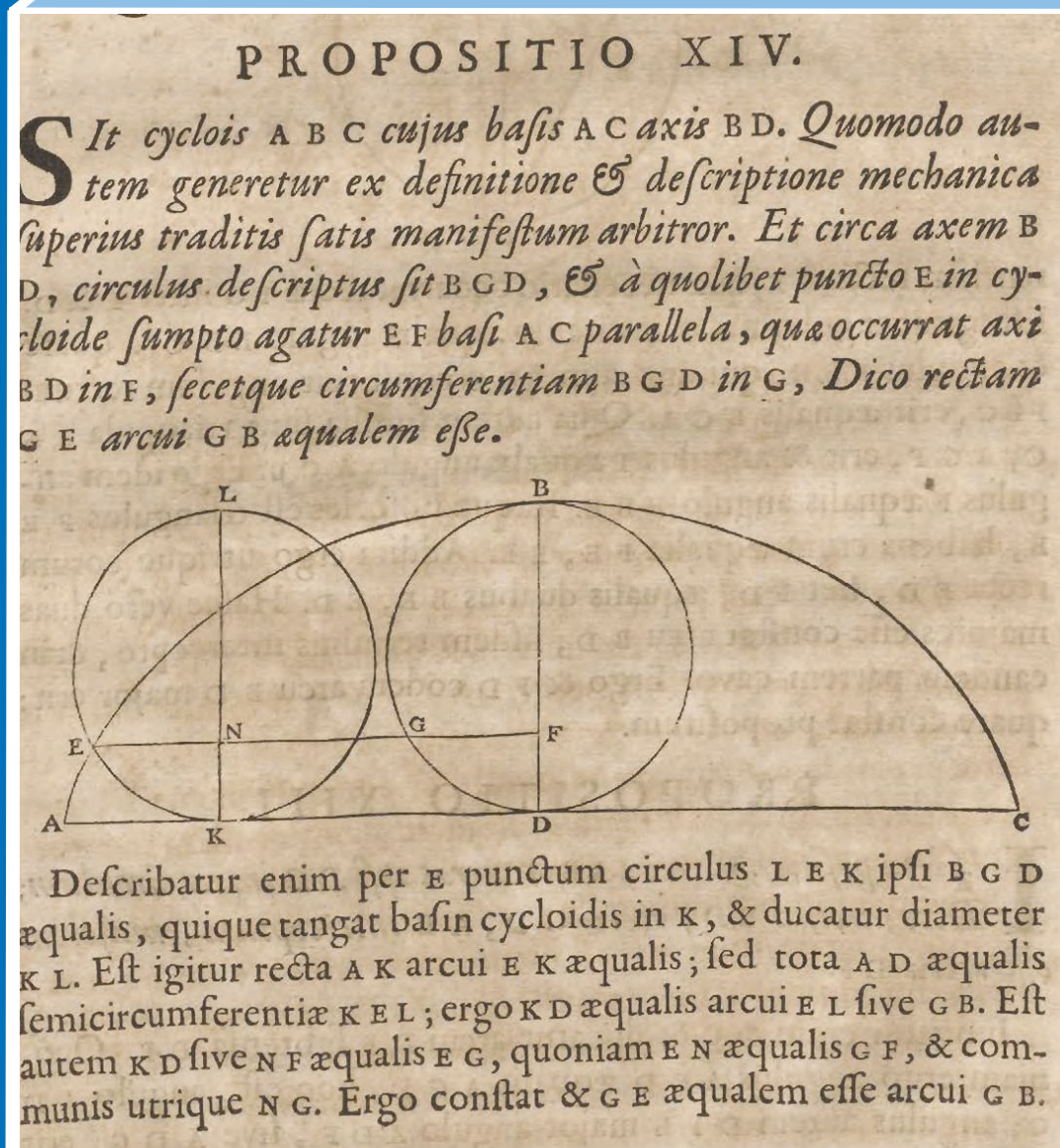
Control theory and some applications on inverse problems and degenerate equations

Control theory studies the action of an external or self-regulation by a feedback control on dynamical systems. When no control is applied, the state of the solution at a given time is determined by the initial data and the dynamics. Control theory analyzes the ways, and related questions, to drive the initial state to a desired final state at time T , by introducing a control in the original system.

In her talk, Alabau-Boussouira will present the subject and some current joint research on inverse problems with indirect source reconstructions for systems of PDEs and on degenerate equations. In inverse problems, one tries to reconstruct information from measurements, such as sources of the phenomenon. The control of degenerate equations appears in various applications (cloaking, vision). In this case, one loses some positivity properties. This requires the development of a suitable mathematical framework.

She will also discuss some history of mathematics and fruitful interactions between mathematics, physics and mechanics, and through cooperation with inventors and engineers.

Fatiha Alabau-Boussouira has been a full professor of mathematics at the University of Lorraine since 1999. She works in control theory for PDEs, and carries out her research at the Laboratoire Jacques-Louis Lions at Sorbonne University. From 2014 to 2017, she was President of the French Society of Applied and Industrial Mathematics (SMAI), and is now the French coordinator of the French-German-Italian LIA COPDESC on Applied Analysis.



Mathematical figure from the original book of Christiaan Huygens, conserved at the Cornell University Library.