Output regulation of a Korteweg-de Vries equation

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In this talk, I will discuss about the output regulation of a nonlinear PDE, namely a Korteweg-de Vries (for short KdV) equation. Roughly speaking, output regulation consists in designing a control such that a part of the solution converges to a desired constant function, called the reference. This part of the solution, called the output, is, in most cases, a trace of the solution. Our approach relies on the so-called PI controller, for which a brief introduction will be given. To achieve such a goal, several methodologies are needed : the forwarding method and a strictification technique. Both these strategies will be presented during the talk. At the end, we prove that the output regulation problem can be addressed globally for the linearized KdV equation and locally for its nonlinear version.

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