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Most mathematical studies so far have considered the particular case of a two-layer flow, in which there is exactly one interface. Francisco's PhD work focused on the strongly nonlinear, non-dispersive setting of three layers [2] and thus two interfaces, in a channel bounded by horizontal rigid walls, and also on the study of a model with the same setting but without the upper rigid lid [3] .

Mathematical modelling of waves in fluids

This booklet is primarily aimed at the mathematics teacher, but should also be of interest to teachers of science. It sets out a number of case studies suitable for mathematical modelling with calculus. The book starts with an explanation of the mathematical modelling process then suggests specific areas of study which include:

Mathematical Modelling with Calculus | STEM

Case Studies and Films Modelling Removal of Sulphur Dioxide from Flue Gas Oxford Mathematician Kristian Kiradjevic talks about his DPhil research, supervised by Chris Breward a nd Ian Griffiths in collaboration with W. L. Gore and Associates, Inc., on modelling filtration devices for removal of sulphur dioxide from flue gas.

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This text, which serves as a general introduction to the area of mathematical modelling, is aimed at advanced undergraduate students in mathematics or closely related disciplines, e.g., students who have some prerequisite knowledge such as one-variable calculus, linear algebra and ordinary differential equations.

Mathematical Modelling - Concepts and Case Studies | ] ...

Abstract. We propose a compartmental mathematical model for the spread of the COVID-19 disease with special focus on the transmissibility of super-spreaders individuals. We compute the basic reproduction number threshold, we study the local stability of the disease free equilibrium in terms of the basic reproduction number, and we investigate the sensitivity of the model with respect to the variation of each one of its parameters.

Mathematical modeling of COVID-19 transmission dynamics ...

Focusing on growth and decay processes, interacting populations, and heating/cooling problems, Mathematical Modelling with Case Studies: A Differential Equations Approach using Maple and MATLAB, Second Edition presents mathematical techniques applicable to models involving differential equations that describe rates of change. Although the authors

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