

Flow in an LMFBR boiler - from reactor floor to asymptotics, analysis and numerics.

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This talk will consider flow in a Liquid Metal Fast Breeder Reactor (LMFBR) boiler pipe. Though the UK LMFBR programme was cancelled in 1994, the current resurgence in nuclear power desirability has re-ignited interest in this subject. A fluid mechanics/two phase flow model is presented for the determination of the "dryout point" in a boiler pipe. This involves a nonlinear singular integro-differential equation which poses significant analytical, asymptotic and numerical challenges. The talk illustrates how the mathematics can be followed all the way from the reactor floor to the computer - industry to analytic mathematics.