

## **ON THE INVERSE STRATIFICATION DUE TO THE CLOSURE FLOW IN OPEN POOL REACTORS WITH UPWARD COOLANT FLOW**

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**Abstract.** Research reactors with open pool and upward cooling flow usually have a closure flow which goes down the riser, placed above the core, to avoid activated products reaching the pool, resulting in an interface of hot and cold water near the joint of the riser and the opening of the outlet pipe. In this zone the hot water coming from the core, meets the cold water flowing downwards from the pool. This hot-cold interface is an unstable inverse stratification with the cold water on top. The present study predicts, in a generic riser geometry and with a CFD tool, the height at which this interface settles and its behavior as a function of different boundary conditions such as core flow, closure flow and core outlet-pool temperature difference. Needless to mention the importance of using CFD codes in the early stages of a project as useful tools to feedback the design.