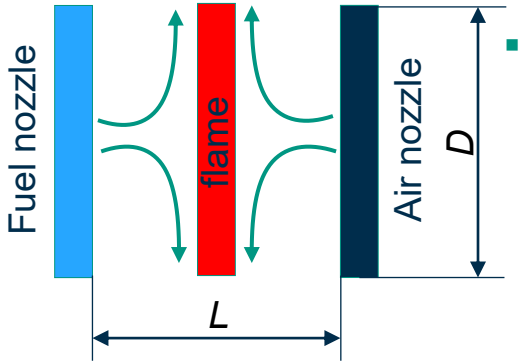
Bachelor Thesis

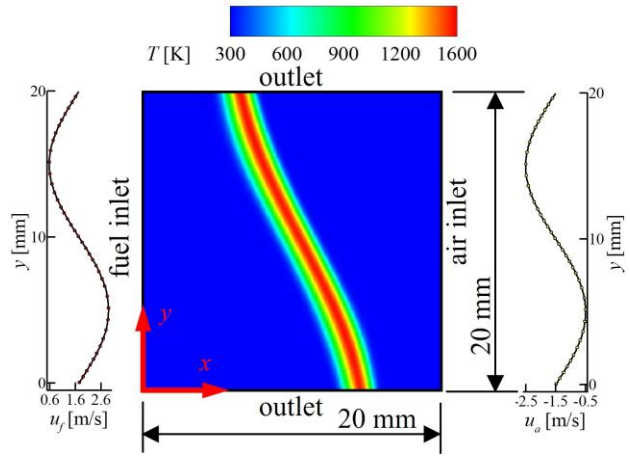
- Impact of nozzle separation distance to diameter ratio on the 1D flamelet assumption



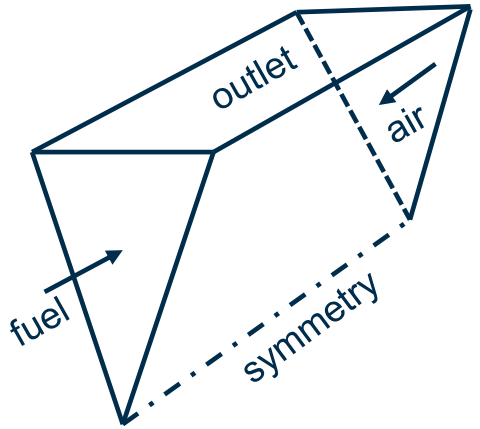
Schematic of configuration

- At what *L/D* ratio, the 2D counter flow flames behave like1D counter flow flames at different strain rates?
  - Impact of differential diffusion
  - Impact of strain rates

- Impact of geometry shape planar to axis-symmetric on hydrogen counter-flow flames



Computational domain for planar case



Computational domain for axis-symmetric case

- Impact on flame curvature
- Variation of local strain rate from inlet strain rate
- Extinction limits (local strain rate)
- Flamelet assumption

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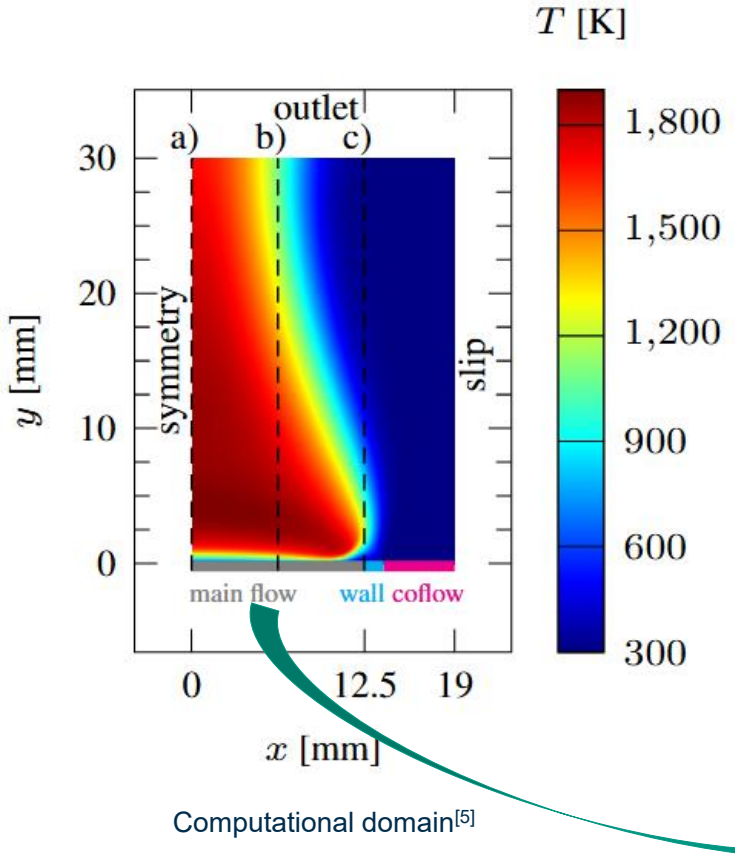
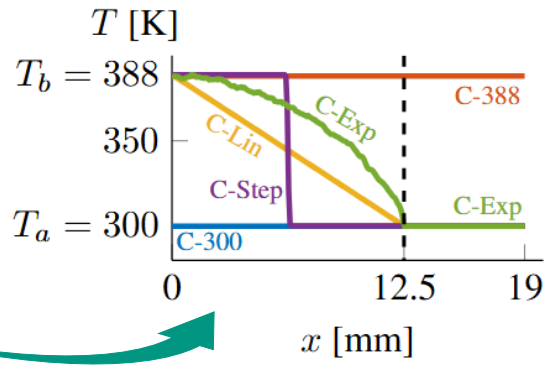
Master Thesis

- Sensitivity of burner-stabilised flame with reaction rate coefficients with burner surface temperature inhomogeneity
  - Supervisors – Philipp Golda and Prashant Shrotriya



Computational domain[5]



Different temperature profiles considered at inlet

- Motivation
  - For experiments, it's important to know whether temperature/coflow velocity is more critical or the rate coefficients of some important reactions
- Observations noted till now
  - Frequency of flame oscillations in 2D was same as in 1D for the same inlet temperature.
  - Spatial variation of temperature didn't affect the frequency; however, maximum temperature of burner surface governed the frequency of flame oscillations.
- Questions to be answered
  - Quantification of sensitivity of flame oscillation with temperature versus reaction rate coefficients.
  - Impact of different flame markers used for calculations of frequency.

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