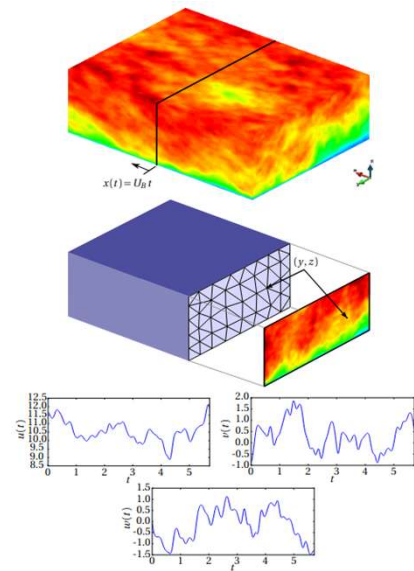
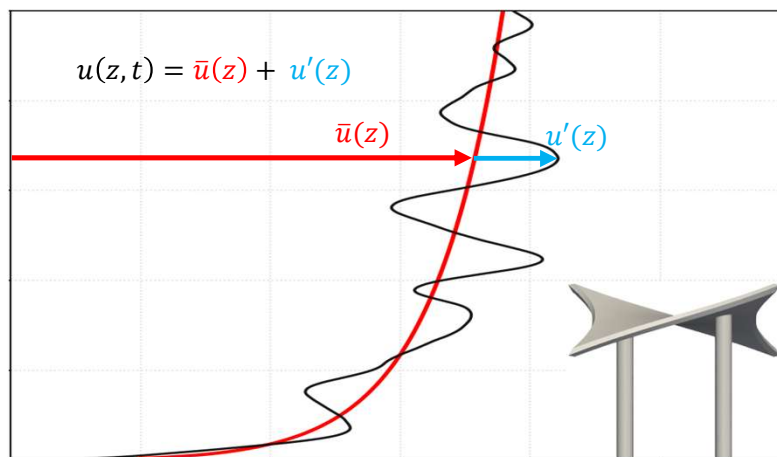


Bachelor's Thesis:

Characterization and Validation of Turbulent Inflow Generated by WindGen for Numerical Wind Tunnel Simulations

Accurate reproduction of the Atmospheric Boundary Layer (ABL) is essential in computational wind engineering. *WindGen* is a synthetic turbulence generator that creates inflow conditions for numerical wind tunnel simulations, yet its behavior and downstream evolution are not fully characterized.



In this thesis, turbulent inflow conditions generated by *WindGen* will be implemented and analyzed. CFD simulations will be performed to evaluate how velocity, turbulence intensity, and energy spectra develop downstream. The results will be compared to analytical ABL models and literature data.

Expected outcome: Quantitative characterization of *WindGen*-generated inflows and practical recommendations for their use in CFD-based wind engineering studies.