**ransX framework**

**Developer’s Guide**

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| --- | --- | --- | --- |
| Date | Version | Person | Change |
| 30/March/2019 | 1.0 | Miroslav Mocak | Initial instructions |
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This guide serves as a knowledge base for anyone wanting to understand details of the ransX framework and develop it further.

ransX as a framework has two main computational parts:

* calculation of space-time averages at runtime of hydrodynamic code over time between two consecutive data dumps, where details of implementation will differ from code to code
* post-processing of these space-time averages over required time range (typically several convective turnover timescales) using python and object-oriented programming model

**Calculation of space-time averages in hydrodynamic code based on implementation in PROMPI**

rans\_avg.f90

**Structure of the Post-processing Python Code Repository**

**ransX\DATA\TSERIES -** post-processed space-time averages from hydrodynamic code

**ransX\DATA\RANSDAT -** running averages from hydrodynamic code

**ranxX\DOCS -** documentation (theory/user/implementation/developers guide)

**ransX\EQUATIONS** - classes each dedicated to a specific RANS equation

**ransX\PARAMS** - parameter files for specific simulations

**ransX\RESULTS** - result plots

**ransX\UTILS -** classes for calculus, data and parameter reads, plotting control

**ransX\param.ransx** - parameter file controlling output plots

**ransX\param.single** -

**ransX\param.tseries** -

**ransX\ransX.py** - primary plotting script

**ransX\ransX\_tseries.py** - script for calculations of averages for a given time range

**ransX\ransX\_single**.py -

Script ransx.py

Script ransx\_tseries.py

Script ransx\_single.py

Class MasterPlot.py

Class Calculus.py

Class PROMPI\_data.py

Class ContinuityEquationWithTurbulentMassFlux.py

**Related Documents**

RansXtheoryGuide.pdf

RansXimplementationGuide.pdf

RansXdevelopersGuide.pdf

RansXuserGuide.pdf