



SOLPS-EIRENE IMAS interface status

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- Introduction
- Work status
- EIRENE interface structure
- Summary and plans



AC activities in 2024

SOLPS-ITER
module

EIRENE input
interface

(based on SOLPS-ITER output)

Dockerisation

SOLEEDGE module



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Gateway cluster has not been operating since October 18!

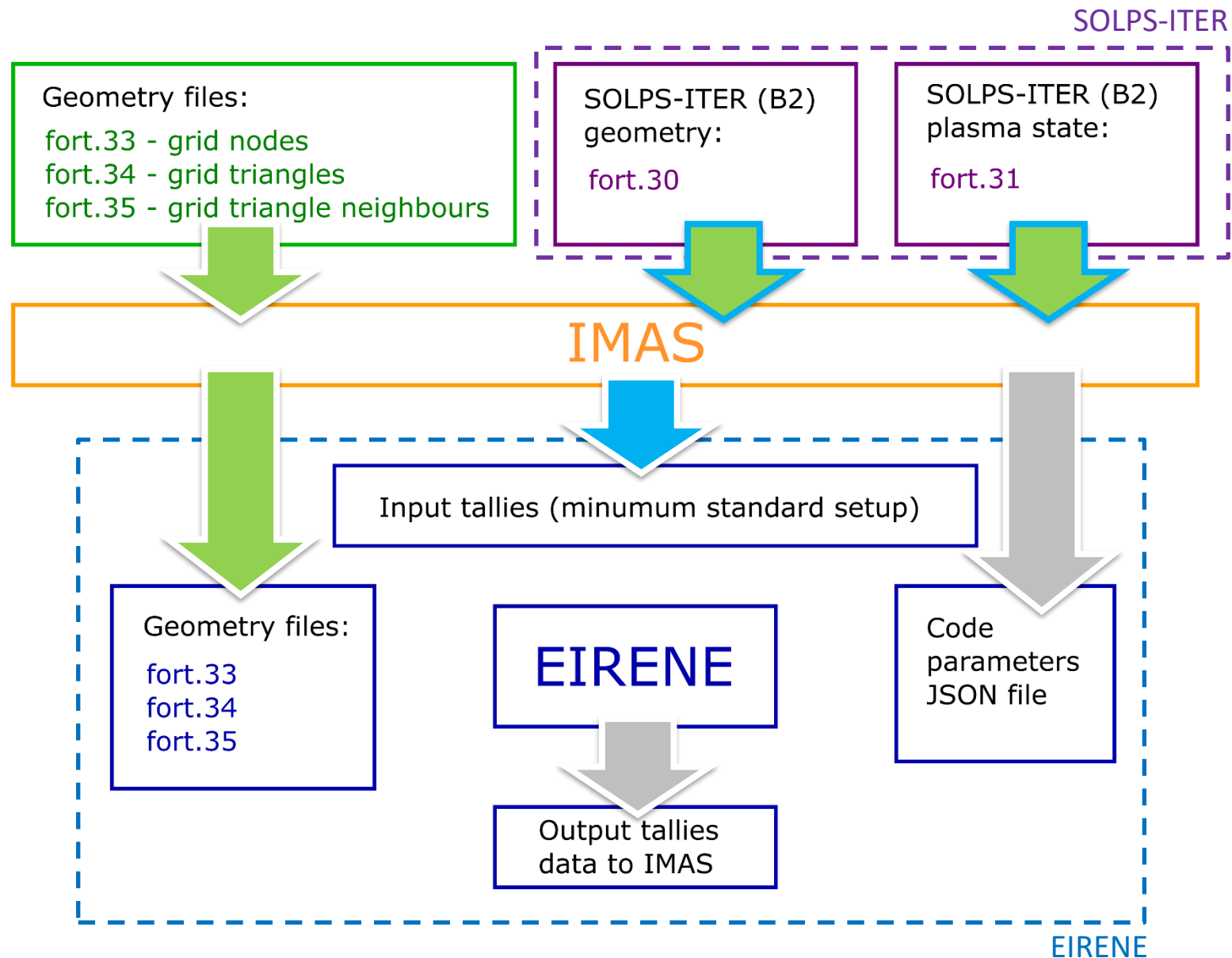


Ongoing work

- Testing the SOLPS-ITER input with various data scenarios and generalization
- Preparation of the script getting plasma state from IDS and putting to input tallies
- Dockerization
 - installation EIRENE on Gateway
 - creating a docker file that specifies dependencies, environment and commands to run
 - building an image from the docker file
 - tests on Gateway

More on Indico (Regular VC#15) and at [GoogleDocs – presentation](#)

EIRENE interface structure



EIRENE interface structure



Input data in EIRENE

Data name	Unit	Data format	Definition	IDS fields	Status
TEIN	eV	(1:NCELLS)	Plasma Temperature for Electrons – tallies #1	edge_profiles.ggd[:].electrons.temperature[:].values	Added
TIIN	eV	(NSPECIES: NCELLS)	Plasma Temperature for Bulk Ions – tallies #2	edge_profiles.ggd[:].ion[:].temperature[:].values	
DEIN	cm ⁻³	(1:NCELLS)	Plasma Density for Electrons – tallies #3	edge_profiles.ggd[:].electrons.density[:].values	Added
DIIN	cm ⁻³	(NSPECIES: NCELLS)	Plasma Density for Bulk Ions – tallies #4	edge_profiles.ggd[:].ion[:].density[:].values	
VZIN	cm/s	(NSPECIES: NCELLS)	Plasma Drift Velocity z-component for Bulk – tallies #7	edge_profiles.ggd[:].ion[:].state[:].velocity_diamagn.etic(?)	
BXIN	-	(NCELLS)	Magnetic field unit vector, x-component – tallies #8		
BYIN	-	(NCELLS)	Magnetic field unit vector, y-component – tallies #9		
BZIN	-	(NCELLS)	Magnetic field unit vector, z-component – tallies #10	equilibrium.time.slice[:].ggd[:].b_field.z[:].values	
BFIN	T	(NCELLS)	Magnetic field strength – tallies #11		
EDRIFT	eV	(NSPECIES: NCELLS)	Kinetic energy in drift motion for Bulk Ions – tallies #13	edge_profiles.ggd[:].ion[:].energy_density_kinetic[:].values(?) (J.m ⁻³)	
VOL	cm ³	NCELLS	Zone Volume – tallies #14	equilibrium.grid.ggd[:].grid[:].grid_subset[:].dimension	

https://docs.google.com/document/d/1J_w_5wB3NImTEgMxm_apsacD1MbKFQrbq/edit?usp=drive_link&oid=102684937244265618208&rtpof=true&sd=true



Remaining work scheduled for 2024

- Code parameters JSON file
 - Definition of code parameters
- SOLEDGE module

Plans for 2025

- Usertests of gitLab EIRENE input interface
- Extension of the plasma data for input tallies
- Continuation of SOLEDGE module work
- Output tallies
 - (Definition of variables that should be IMASfied via GoogleDocs table)



Thank you for attention



Concept of IMAS output

- The proposal is to add new subroutine inside EIRENE code
- In the similar way as subroutine: **outidlta.f**
 - Possibility to treat the output to IMAS IDSs as one of the standard outputs in the code.
- An additional question arises whether to add a standard deviation to the data to IMAS IDS.