The Verification and Validation (V&V) procedure assesses the reliability of numerical simulation codes by:
- Ensuring that the model equations are correctly implemented (code verification)
- Estimating the numerical error affecting simulations (solution verification)
- Assessing the consistency of the code results with experiments (validation)

These procedures have been applied to GBS.

The transportation of accuracy tests ensure the both the correct coding of the model equations and the correct implementation of the chosen numerical scheme:
- Numerical error: $\epsilon_h = |f_h - f| - C_h h^{p+1} + O(h^{p+2})$
where $h$ represents the degree of refinement of the mesh, $f_h$ the numerical solution and $f$ the exact solution
- Observed order of accuracy $p$: $p = \frac{\log(|f_h - f|)}{\log(h)}$
- The code is verified if $p \to p$ when the grid is refined (i.e., for $h \to 0$)

The manufactured solution $g$ should:
- Be general
- Be smooth enough and not singular
- Satisfy code constraints
- Avoid a term to overshadow the value of another
- No physical constraints on the choice of $g$

The Global Braginskii Solver (GBS) code
- Two-fluid drift-reduced Braginskii equations, $\nu = v^2$, $d/dt \ll \omega_c$
- Uniform mesh spacing
- Numerical solutions in the asymptotic regime
- No singularities or discontinuities

The validation procedure enables us to:
- Compare different models
- Reveal physical phenomena
- Assess the predictive capability of a code

Conclusion