



SNEWS 2.0

Detector Response Task

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Overview



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The purpose of the working group is to collect, share, and develop models of detector responses so that we can compare sensitivity across the worldwide network of neutrino detectors. Naturally entangled with **supernova_models** task.

Submodules in [detector response GitHub repository](#):

- [SNOwGLoBES](#): open-source C code with basic support for interactions in typical detector media. Required: detector response matrix.
- [sntools](#): event generator for water, LS, WbLS detectors by Jost M.
- [ASTERIA](#): IceCube fast supernova Monte Carlo (Spencer G. et al.).
- [GenieSNova](#): event generator using GENIE (Andrey S.); **request access**.

Current Efforts: Focus on SNOwGLOBES



SNOwGLOBES is *not* a detailed detector Monte Carlo. It's a community tool used to compare sensitivity to CCSN models across many experiments.

- Generic support for H₂O, Pb, Ar, scintillator detector types.
- Explicit support for NO ν A, HALO, and IceCube detector responses.
- Usual neutrino cross sections implemented via GLOBES.
- Plans to implement CE ν NS, with SNEWS2.0 folks leading the way. Current efforts are based on detector-specific codes (see talk by Elise M.).
- [Supernova models programs](#) to convert models to SNOwGLOBES format.

Other interaction-, medium-specific codes shared in GitHub on voluntary basis.

What Can I Do?



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If your favorite detector does not have a SNOwGLoBES response file, a useful project is to create one and share it!

- For supported physics, a good summer project for advanced undergrad/MS student. For example, see Malmenbeck & O'Sullivan, [PoS\(ICRC2019\)975](#).
- Implementing new physics (CE ν NS) would be a **highly valued contribution!**

Users are welcome to share other codes in detector_response, e.g., [ASTERIA](#).

- GitHub repository is private, sharing repositories via submodules supported.
- Honor system: onus on authors to respect software licenses (e.g., NR code).
- Expect good citizenship about sharing internal collaboration codes.