Getting Started with SALT2-2021

SALT2-2021 is a newly trained version of the SALT2 type Ia supernovae model from Guy et al. 2007. SALT2-2021 uses the same data and same training code as the JLA version from Betoule et al. 2014, but has updated Milky Way extinction and calibration zero points. In addition to our best-fit model, we provide a **SALT2-2021 Uncertainty Suite**: a collection of 70 SALT2 surfaces, each including a unique calibration perturbation with respect to the nominal SALT2-2021 surface.

Detailed descriptions of these two products are provided in Taylor et al. 2021 (https://arxiv.org/abs/2104.00172), and in README files within each product. This document contains basic usage instructions for two common programs. Contact salt2-2021@outlook.com if you need any assistance.

snfit usage

SALT2-2021 can be used to fit light curves with snfit.

To perform a light curve fit with a SALT2-2021 model, run:

> export SALTPATH = 'Path/to/SALT2-2021'
> snfit lightcurve1 lightcurve2 …

Where SALTPATH points to the directory containing the instrument, magnitude system, and salt2-2021 files (i.e. …/data/).
All of this information is passed to snfit to be used for light curve fitting.

Detailed instructions, as well as the snfit program itself, are available at supernovae.in2p3.fr/salt/

SNANA usage

SALT2-2021 can be used for both simulations and light curve fitting within SNANA.

To perform a light curve fit with a SALT2-2021 model, run:

> snlc_fit.exe snfit_inputs.nml

Where snfit_inputs.nml is a namelist file containing all of the input parameters for your fit. Inside this file, set

FITMODEL_NAME = 'Path/to/SALT2-2021/'

Where FITMODEL_NAME points to the directory that contains the SALT2.INFO file – i.e. …/data/salt2-2021/)

To perform a simulation with a SALT2-2021 model, run:

> snlc_sim.exe sim_inputs.input

Where sim_inputs.input is a namelist file containing all of the input parameters for your fit. Inside this file, set

GENMODEL = 'Path/to/SALT2-2021/'

Examples can be found in

$SNDATA_ROOT/sample_input_files/SALT2-2021

For more information on SNANA, including detailed instruction manuals, check out github.com/RickKessler/SNANA or snana-starterkit.readthedocs.io