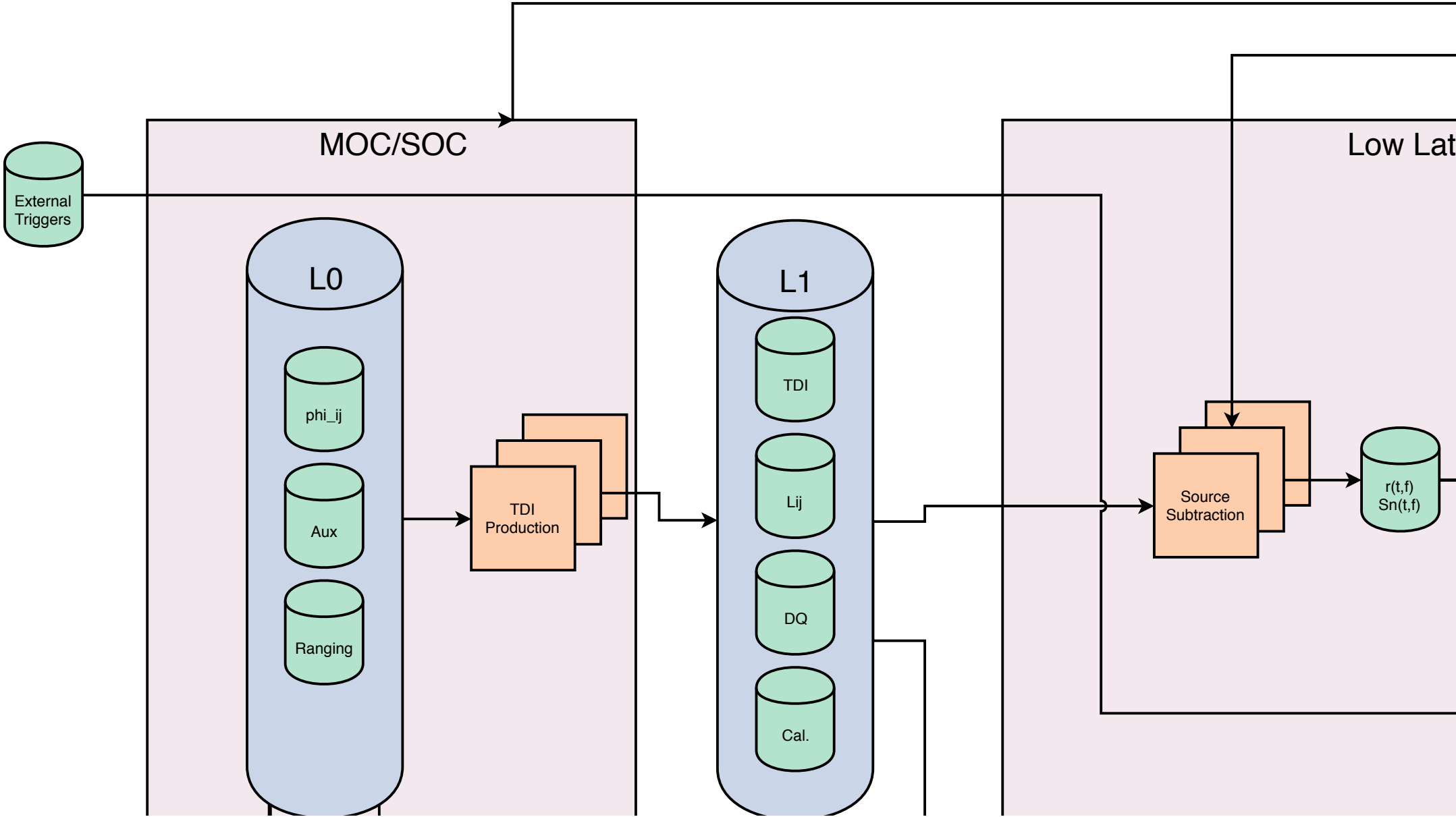
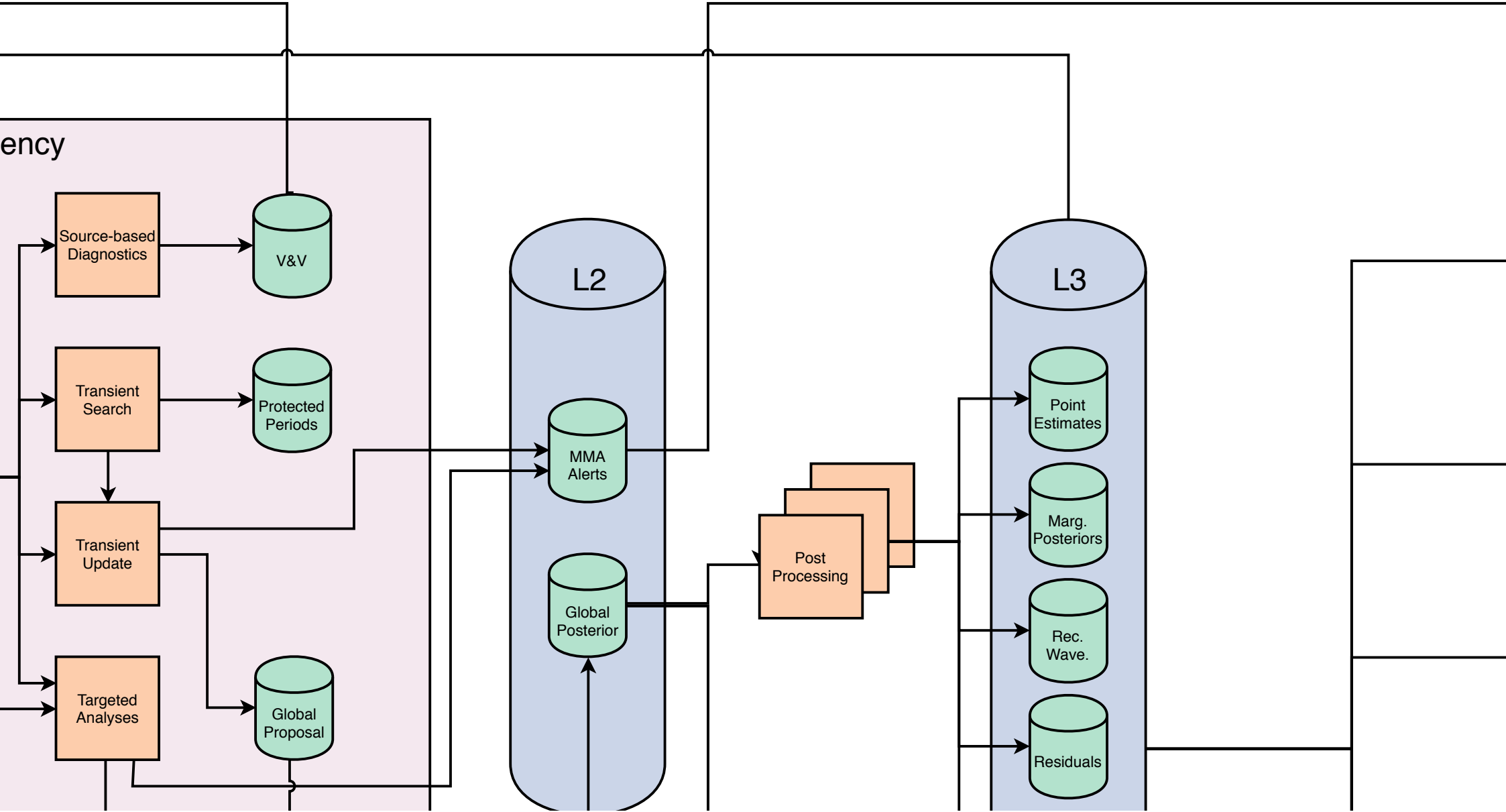
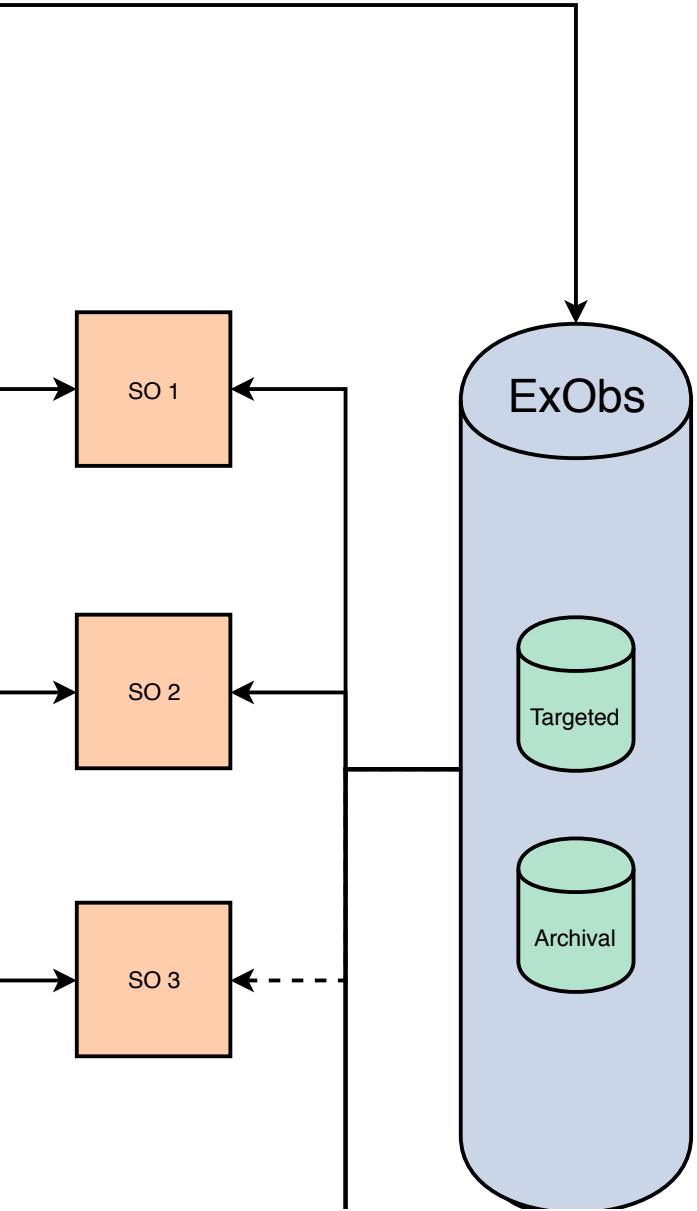

MOC/SOC
Low Lat
External Triggers
L0
phi_ij
Aux
Ranging
TDI Production
L1
TDI
Lij
DQ
Cal.
Source Subtraction
r(t,f)
Sn(t,f)


ency
Source-based Diagnostics
V&V
Transient Search
Protected Periods
Transient Update
Targeted Analyses
Global Proposal
L2
MMA Alerts
Global Posterior
Post Processing
L3
Point Estimates
Marg. Posteriors
Rec. Wave.
Residuals

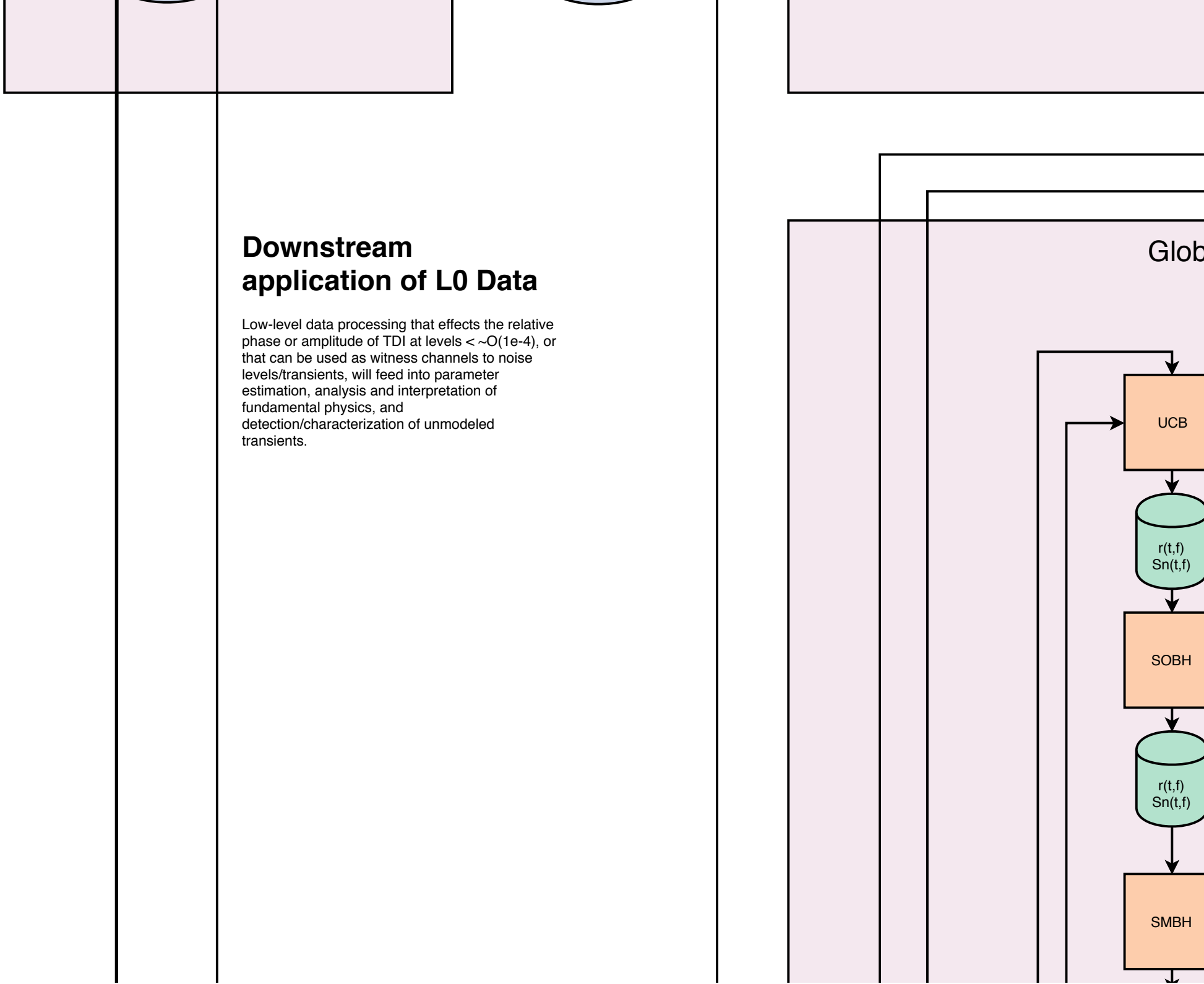


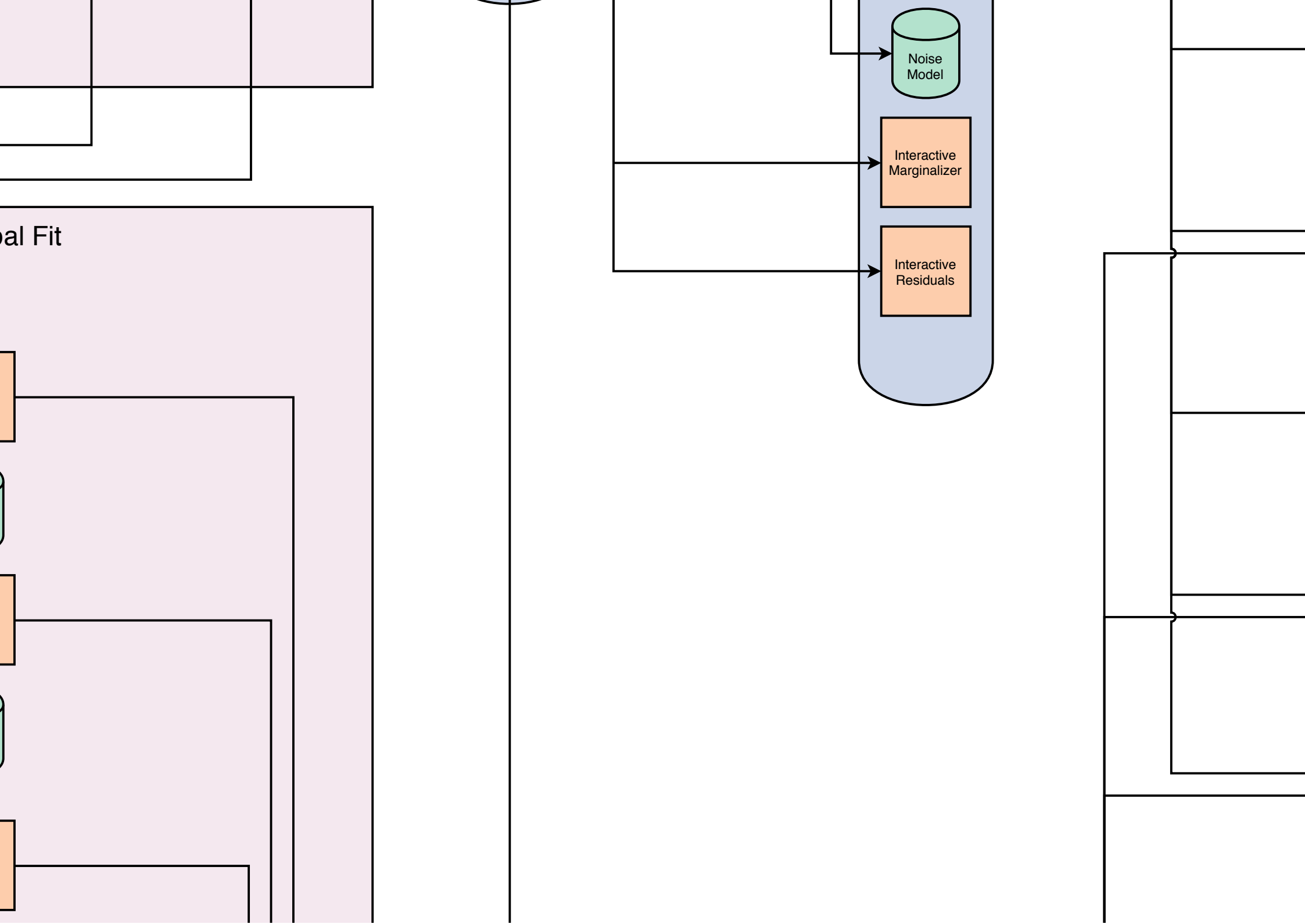
External Observations

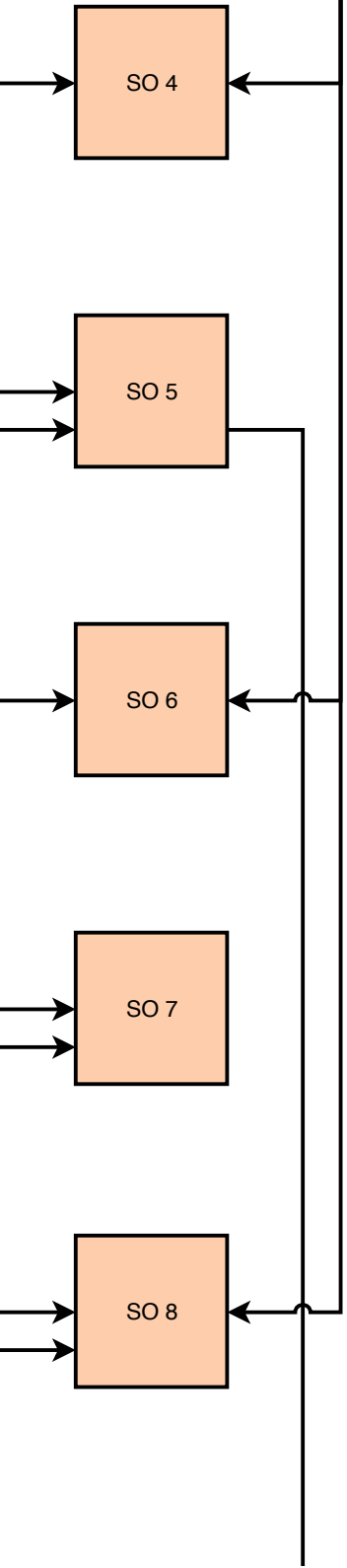
MMA or multiband observations feed back into interpretation of some key science results, and as priors to inform global fit (e.g. a priori known galactic binaries, retrodicting SOBH inspirals, identified host galaxies for SMBH mergers, etc.)

Downstream application of L0 Data

Low-level data processing that effects the relative phase or amplitude of TDI at levels < ~O(1e-4), or that can be used as witness channels to noise levels/transients, will feed into parameter estimation, analysis and interpretation of fundamental physics, and detection/characterization of unmodeled transients.




Noise Model
Interactive Marginalizer
Interactive Residuals
al Fit



Science Objectives (from ScIRD)

SO 1: Study the formation and evolution of compact binary stars in the Milky Way Galaxy.

SO 2: Trace the origin, growth and merger history of massive black holes across cosmic ages

SO 3: Probe the dynamics of dense nuclear clusters using EMRIs

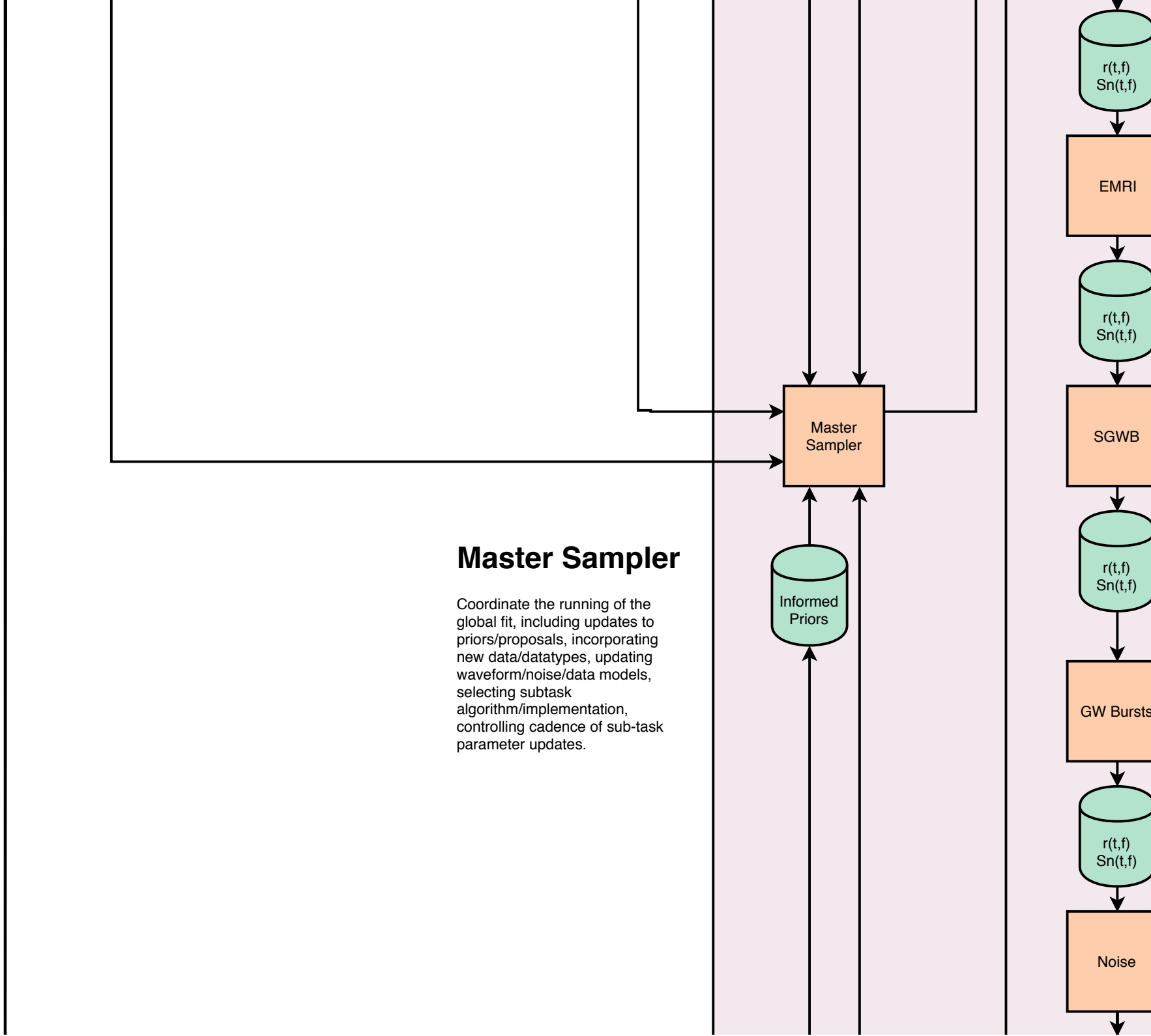
SO 4: Understand the astrophysics of stellar origin black holes

SO 5: Explore the fundamental nature of gravity and black holes

SO 6: Probe the rate of expansion of the Universe

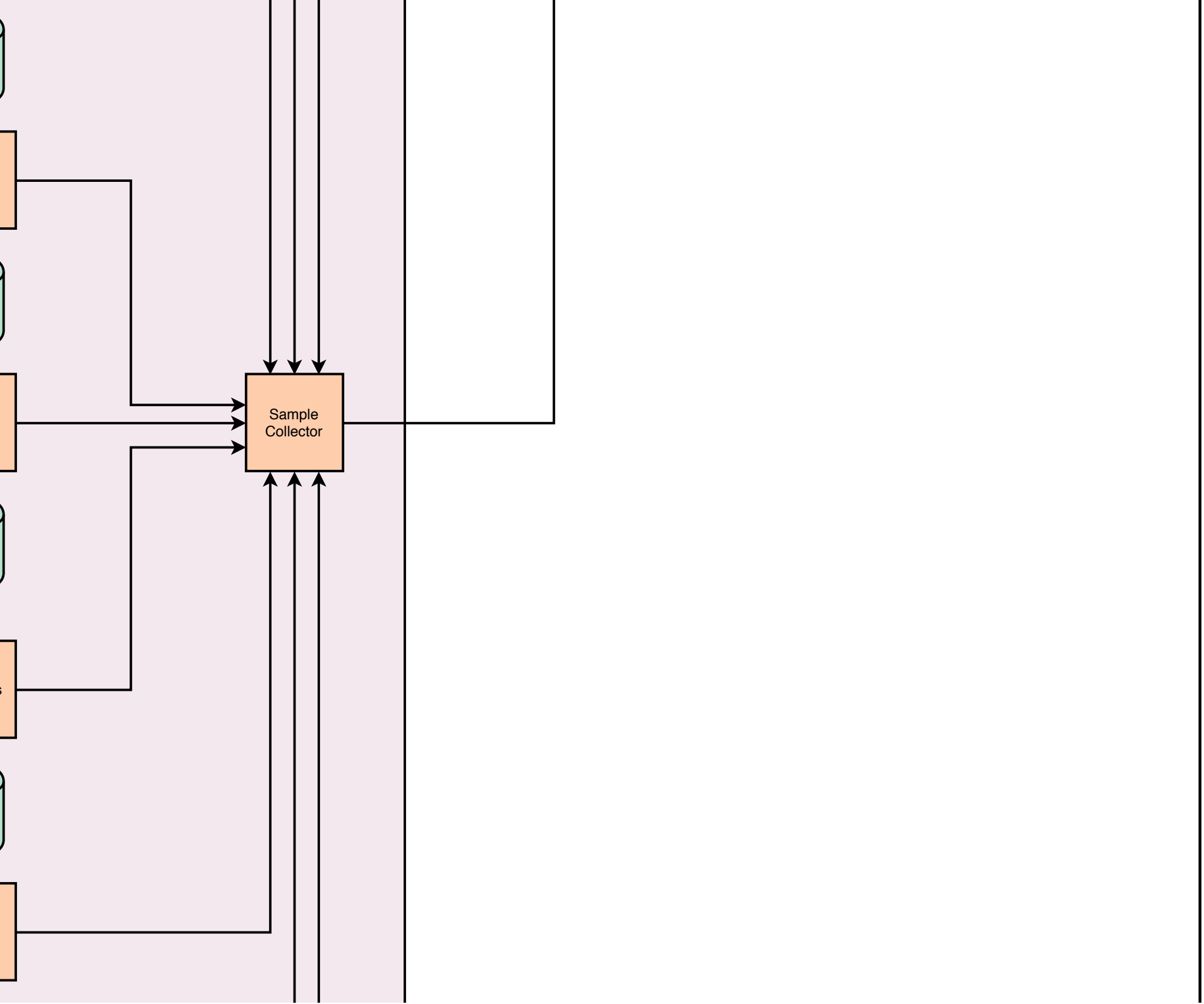
SO 7: Understand stochastic GW backgrounds and their implications for the early Universe and TeV-scale particle physics

SO 8: Search for GW bursts and unforeseen sources



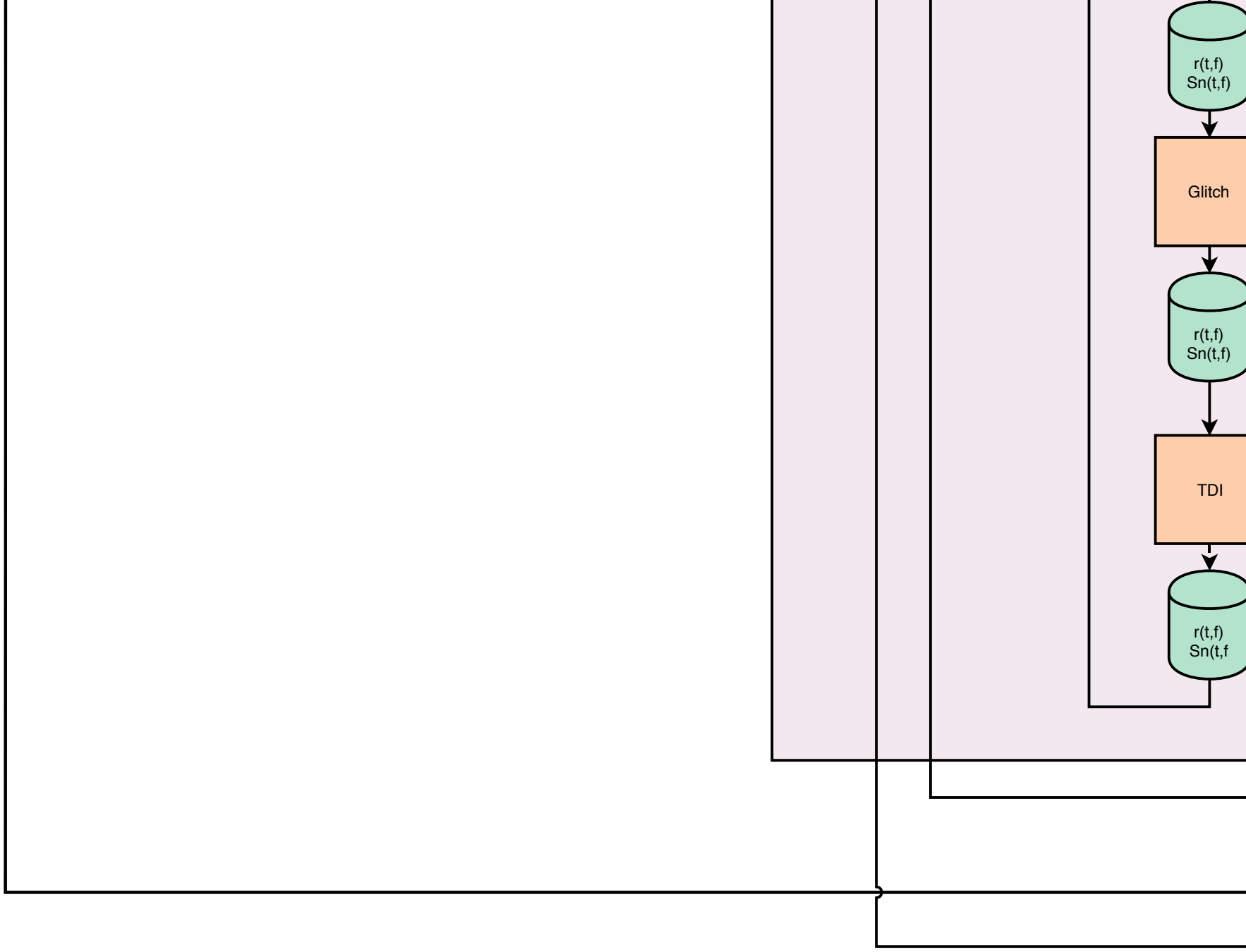
Master Sampler

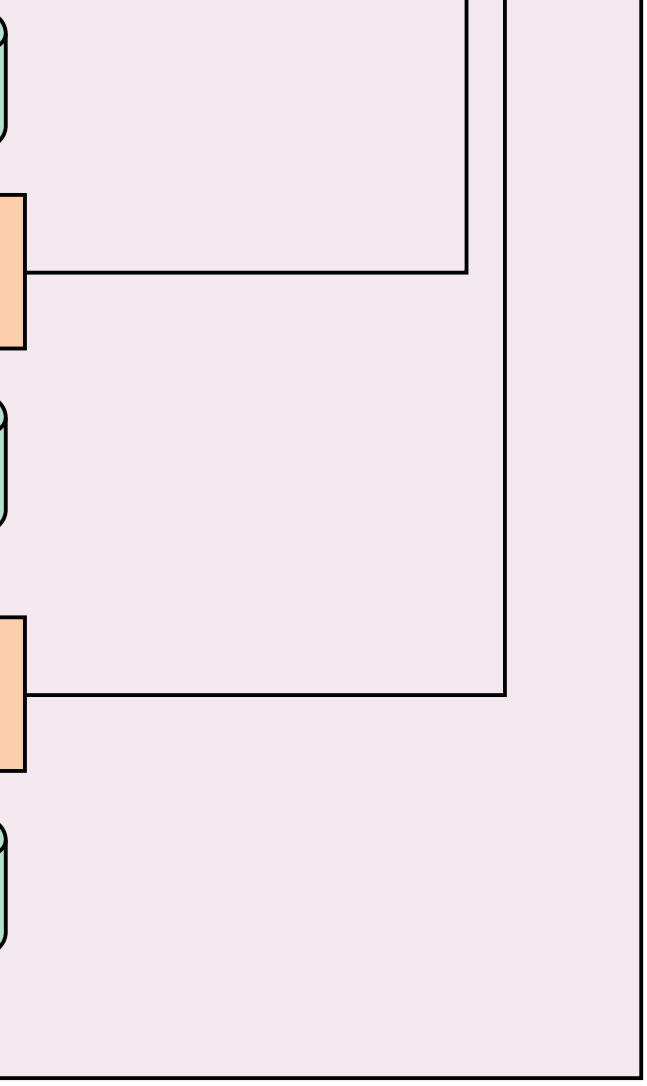
Coordinate the running of the global fit, including updates to priors/proposals, incorporating new data/datatypes, updating waveform/noise/data models, selecting subtask algorithm/implementation, controlling cadence of sub-task parameter updates.


Sample
Collector

Fundamental Physics

Findings from fundamental physics analyses (e.g. testing GR) feedback into the waveform models used for the global fit.


r(t,f)
Sn(t,f)
Glitch
r(t,f)
Sn(t,f)
TDI
r(t,f)
Sn(t,f



TDI in Global Fit

Uncertainties in TDI production lead to systematic errors in source recovery. For observables that have smaller statistical errors than the systematics introduced by TDI (e.g. high SNR SMBHs) including a model for TDI production in the global fit robustly propagates errors to the final parameter estimation