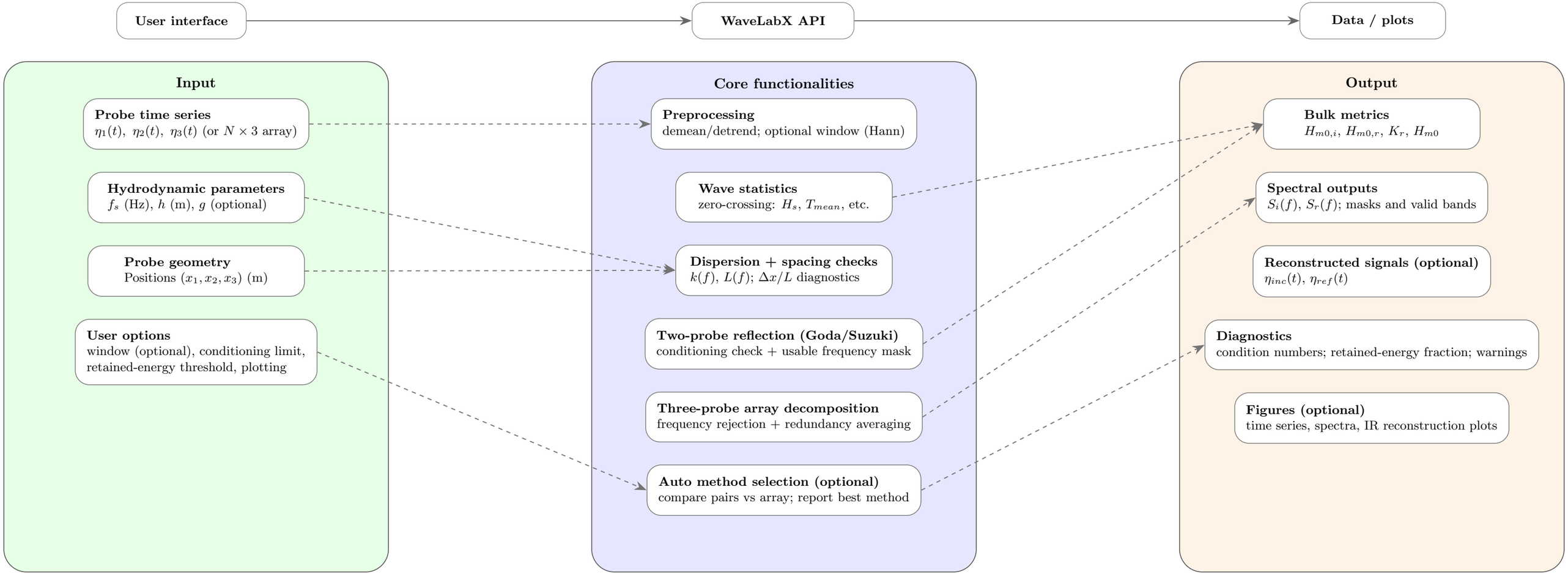
User interface
WaveLabX API
Data / plots
Input
Probe time series
$\eta_1(t),\ \eta_2(t),\ \eta_3(t)$ (or $N \times 3$ array)
Hydrodynamic parameters
f_s (Hz), h (m), g (optional)
Probe geometry
Positions (x_1, x_2, x_3) (m)
User options
window (optional), conditioning limit, retained-energy threshold, plotting
Core functionalities
Preprocessing
demean/detrend; optional window (Hann)
Wave statistics
zero-crossing: H_s, T_{mean}, etc.
Dispersion + spacing checks
$k(f)$, $L(f)$; $\Delta x/L$ diagnostics
Two-probe reflection (Goda/Suzuki)
conditioning check + usable frequency mask
Three-probe array decomposition
frequency rejection + redundancy averaging
Auto method selection (optional)
compare pairs vs array; report best method
Output
Bulk metrics
$H_{m0,i}$, $H_{m0,r}$, K_r, H_{m0}
Spectral outputs
$S_i(f)$, $S_r(f)$; masks and valid bands
Reconstructed signals (optional)
$\eta_{inc}(t)$, $\eta_{ref}(t)$
Diagnostics
condition numbers; retained-energy fraction; warnings
Figures (optional)
time series, spectra, IR reconstruction plots