INSIGHTS – Software tools workpackage

Wouter Verkerke (Nikhef/University of Amsterdam)

INSIGHTS WP 2 – Software tools

- Description in the proposal

WP Number	2	**Start Month 7 – End Month 48**
WP Title	Tools	
Lead Beneficiary	NIKHEF	
Objectives Development of new tools based on novel statistical methods.		
Description of Work and Role of Specific Beneficiaries / Partner Organisations NIKHEF will develop a novel implementation of a morphing technique suitable to describe Effective Field Theories integrated in the RooFit toolkit / ROOT environment. INFN will develop, in collaboration with NIKHEF and CERN, a new high-level model building software tool that allows constraining nuisance parameters, hence reducing systematic uncertainties, from control regions. GAMBIT and BAT will also be developed by UIO and MPP respectively and new versions will be released.		

- Foreseen contributions in proposal
  - Nikhef: EFT Morphing tools → RooFit/ROOT
  - INFN: Bayesian NP Constraining tools → (RooFit/RooStats?)
  - UIO: Parameterization of BSM likelihoods → GAMBIT
  - MPP: Parallelization of MCMC integrals → BAT 2.0
- Discussion items from ESR presentations
  - Modular vs monolithic ROOT (distribution of RooFit, TMVA)
  - Interoperability BAT / RooFit
  - Language: C++ / Julia / Python