#### SOFTWARE STATUS

### • SIMGAM (all new versions now require GEANT 3.21)

#### - v18 (30-Jul-1996)

- » <sup>40</sup>K mode (requires MPE-IDT-10025, which provides more detailed mass distribution for D1 PMTs) (G.W.)
- » <sup>24</sup>Na cascade event simualtion now includes  $\beta$ -particle (requires UNH-IDT-1020).
- » Problem with allowable range of IBEAM parameter. New modes could not be accessed. Change required a new TPT id.
- v19 (23-Aug-1996)
  - » <sup>40</sup>K mode (requires MPE-IDT-10025, which provides more detailed mass distribution for D1 PMTs) (G.W.)
  - » <sup>24</sup>Na cascade event simualtion now includes  $\beta$ -particle (requires UNH-IDT-1020).
  - » IBEAM limitations removed so that new modes could be used.
- v20 (13-Sep-1996)
  - » IBEAM = 13 : <sup>28</sup>Al, single photon + beta
  - » IBEAM = 14 : <sup>27</sup>Mg, two photons + beta (branching ratio slightly incorrect)
  - » Both new modes require UNH-IDT-1020
- v21 (under development at MPE) (G.W.)
  - » Corrects <sup>27</sup>Mg decay mode
  - » Updates handling of beta-particle energy spectrum.
  - » <sup>22</sup>Na background
  - » UNH-IDT-1020 and MPE-IDT-10025 interchangeable for all modes.
- SIMENE unchanged, still at v13

### SOFTWARE STATUS (Cont)

### • SIMFIN

- v11 (30-Jul-1996)
  - » **PSD** broadening option (G. W.)
  - » Event location smearing now optional (default is to smear) (G.W.)
- v12 (3-Sep-1996)
  - » Option to produce SEV file (for use in SIMRSP)
  - » SEV is a reduced EVP file with input photon energy added
  - » **QEV** list input handling corrected.

### • SIMPSF

- v9 (24-Oct-1996)
  - » Option to specify input beam geometry (wide vs narrow).
  - » Angular dependence of DRX added to PSF normalization. For standard PSFs, this is about a 1% correction.
- SIMSPG unchanged, still at v3
- SIMSRV unchanged, still at v3
- SIMTRK obsolete

Modified Architecture of SIM Subsystem

### Modified architecture will:

- Make more effective use of CPU time (SIMENE is presently an all-in-one task, which can require 2-3 weeks of CPU and must be repeated for each set of event selections).
- Eliminate code duplication within SIM (e.g., updates made to SIMGAM require a duplication of those updates in SIMENE).
- SIMENE will be broken up into three separate steps (SIMGAM, SIMFIN, SIMRSP).
- SIMGAM will be modified to generate TRK files as an option.
- SIMFIN will generate either EVP files (for SIMPSF), PBS files or SEV files (for SIMRSP).

#### Status:

- Modified version of SIMFIN is complete.
- SIMRSP is under development. Should be available by Jan.
- TRK option in SIMGAM is further down the line...





### SIMGAM Processing

- Goal was to produce a complete set of IAQs for 20°, 30° and 40° and also to (eventually) replace the 10° data.
- A complete set of SIMGAM jobs for 30° and 40°, along with a nearly complete set at 20°, were finished in October.
- It was then recognized, however, that these jobs did not incorporate the full incident beam covering the complete D1 assembly. The only new features includedwere:
  - » secondaries turned on
  - » LOres updated mass model
- The intention was to include all of the following:
  - » secondaries turned on
  - » wide input beam (covering full D1 assembly)
  - » LOres updated mass model
- The omission in these new jobs was deemed to be important (especially if we are going to spend the CPU), so we immediately began yet another(!) reprocessing.
- Each set of data (one zenith angle) requires ~4-5 months effort on 2 CPUs.
- Presently working on 30° data.

Remember! The new SIMGAM modifications are expected to be most significant (~10%) at high energies and large zenith angles. We felt it was not critically important to replace the 10° data.

### **FUTURE ACTIONS**

- Complete new SIM subsystem architecture (SIMRSP).
- Generate QEV, PSF libraries for 30°, 40°, 20° zenith.
- Clarify the SIM-calibration comparison (report).
- Investigate the development of more flexible IAQ libraries for use in SIMSPG.
- Investigate the incorporation of a more realistic event location distribution into SIMFIN. (Is this necessary?)
- Investigate the feasibility of some angle-averaged PSF.
- Incorporate use of new PSD selection (60-90).
- Incorporate latest ToF corrections (from RvD). Although these corrections are not (yet?) universally used.
- Define simulation requirements for line analysis.