Status of JEM Simulation (jemSim package)

Jürgen Thomas

`j.p.thomas@qmul.ac.uk`

Department of Physics,

Queen Mary, University of London, UK

19.5.2003

Queen Mary
University of London

Simulation structure

- **Basic simulation code** has been provided by Stockholm

- **Code follows hardware architecture** of JEM 0: 11 Input-FPGAs, 1 MainProcessor

- Basic processor steps (masks, thresholds, pre-summation em+had) included in InputFPGA object

- InputFPGA-Block object provides array of 7 x 11 jet elements to **EnergySum and Jet Algorithm** in single object

- Algorithm Block provides results for merger in same format as JEM hardware (Jet, Energy, RoI)

- **Modifications and import into CMT** by Steve as package jemSim

- Input Reader replaced by **JEM Vector Reader** developed for JEM hardware tests, Playback Memories included in InputFPGA object.

- **Physics-tt-Test Vector files** converted using existing perl-Scripts from JEM Hardware tests

- **Energy summation tree** modified to match firmware implementation (mostly), results compared to test vector files: Sum-E_T: all o.k., Sum-E_X, Sum-E_Y: deviations in lowest bit: 1 count too high in jemSim. Caused by ϕ value ?

- **First integration into dbSim** done by Steve

Queen Mary
University of London

There's still a lot to do.

- Fix mismatch of Sum-E_x and Sum-E_y results with old simulation (firmware)

- Include Look-Up table multiplication as in firmware

- Compare with all existing test vector file to comfirm identical values

- Check Jet-Algorithm results (with Sam, Attila)

- Continue data base integration (threshold and mask settings)

- Include Readout functionality: adapt format from TDR etc.