

Update on KDetSim

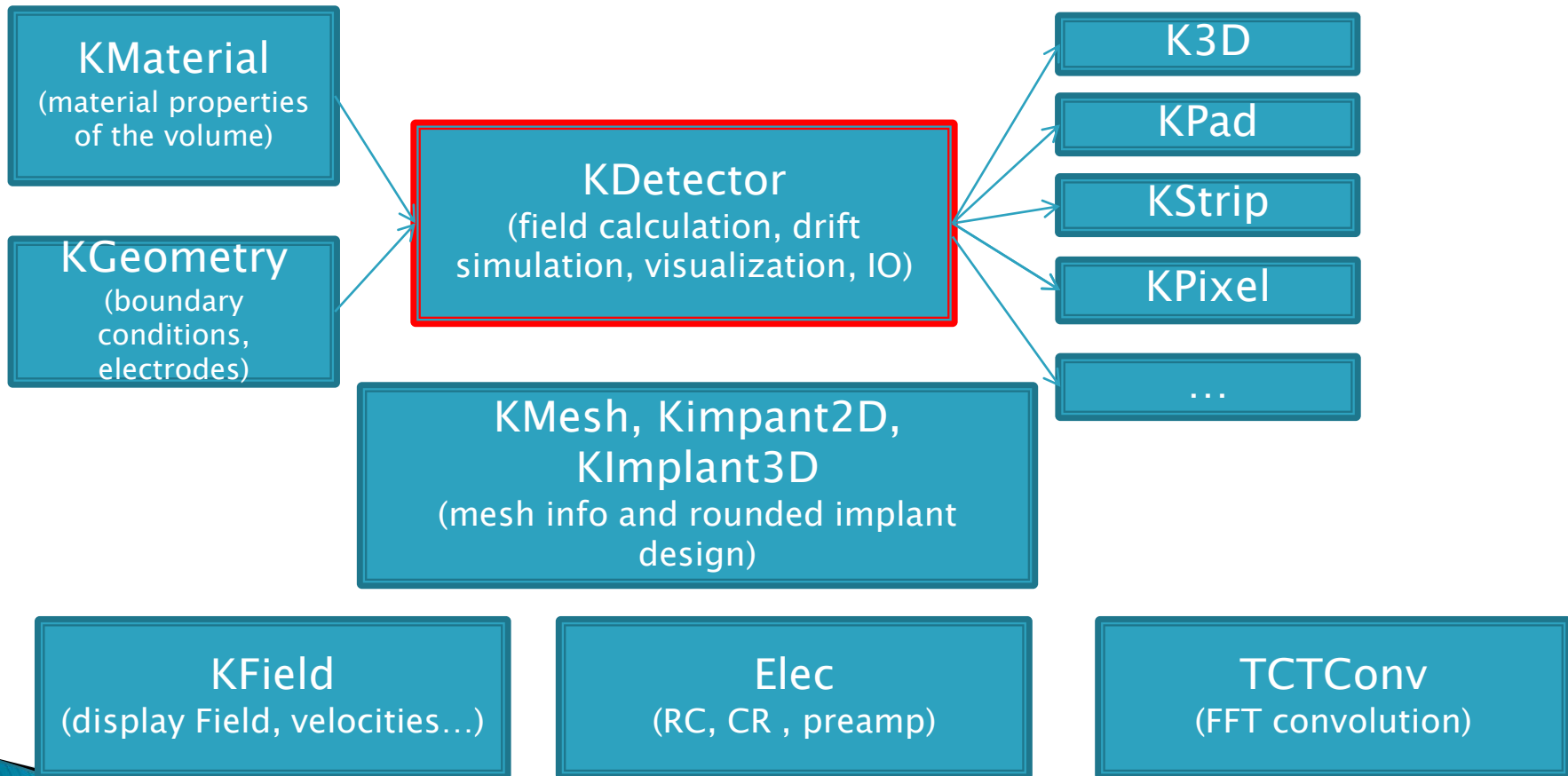
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<http://kdetsim.org>

Structure of the simulation library

The library is a single .dll, .sl which is loaded in the ROOT framework

Specific detector derived classes



Examples of simulation – pad detectors

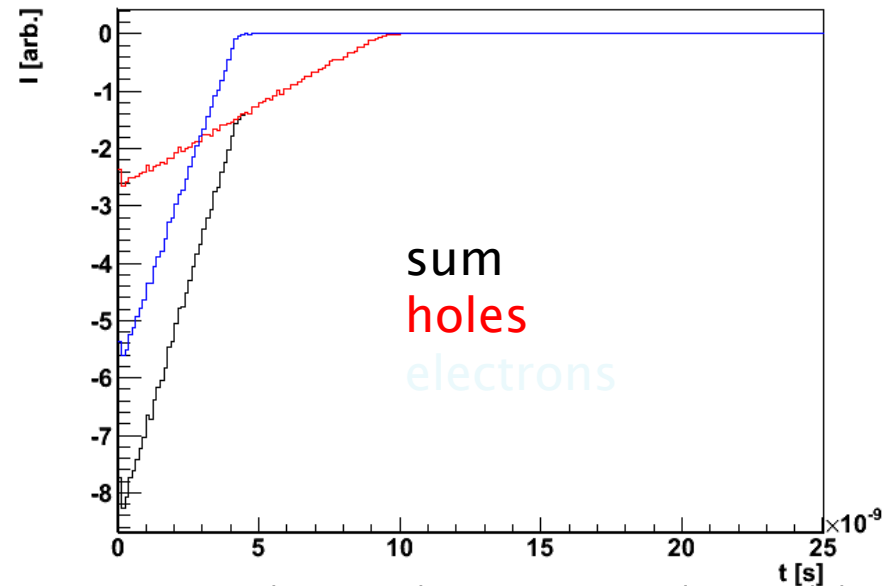
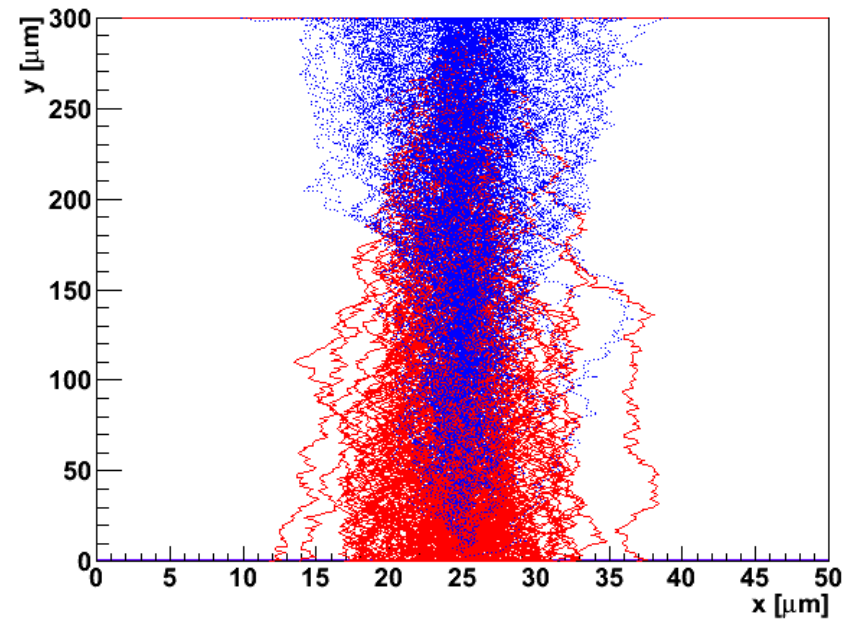
```

{
TF1 *neff=new TF1("neff","[0]",0,1000);
neff->SetParameter(0,1); // set Neff [1e12 cm-3]
KPad det(50,300); // dimensions of the sample
det->Neff=neff;
det->Voltage=-200; // Set voltage
det->SetUpVolume(1); // Setup electrodes
det->SetUpElectrodes();

TCanvas c1;
det->SetEntryPoint(25,299.9,0.5); // define track entry point
det->SetExitPoint(25,1.,0.5); // define track exit point
det->Temperature=253; // set temperature
det->diff=1; // switch on diffusion
det->ShowMipIR(200); // draw drift paths

TCanvas c2;
det->MipIR(200,1); // simulate mip 200 buck.
det->sum->Draw(); // draw current
det->pos->Draw("SAME");
det->neg->Draw("SAME");
}

```



New

- ▶ Addition of FFT to account for transfer functions (see talk from yesterday on signal processing)
- ▶ Multiple voltages for different electrodes (previously only two/three could be set)
- ▶ A more sophisticated energy loss fluctuation distribution procedure is being implemented
- ▶ Small bugs were fixed (memory leaks)

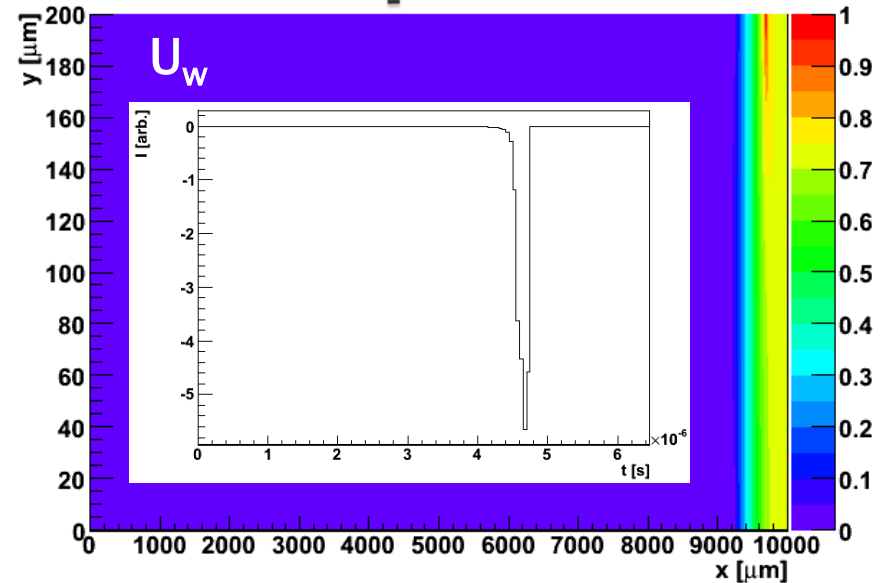
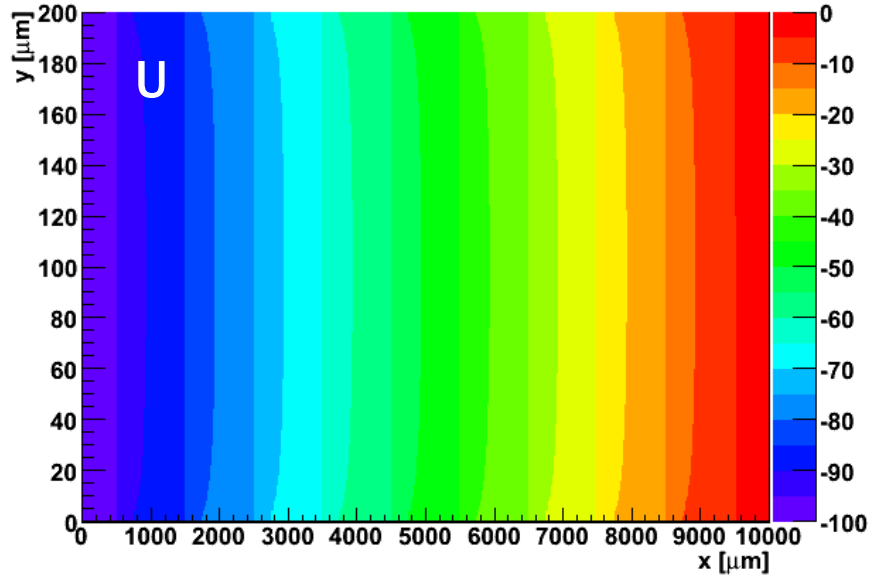
The package was presented in

<https://indico.desy.de/getFile.py/access?contribId=26&sessionId=3&resId=0&materialId=slides&confId=12934>

<https://indico.cern.ch/event/456679/contributions/1126330/attachments/1199070/1744044/ComparissonOfSimulators.pdf>

Look there also for references.

Si-drift detector example



- ▶ Voltage drops steadily over the field electrodes.
- ▶ See HV-CMOS from B. Hiti which includes also simulation results on XFAB detectors

(see examples)

