How to run a material scan of the detector

Step-by-step guide

1. `source /cvmfs/ilc.desy.de/sw/x86_64_gcc49_sl6/v01-19-02/init_ilcsoft.sh`
2. `ddsim --compactFile SiD_o2_v02.xml --macroFile scan.mac  --runType run > materialScan.txt`

scan.mac

```
/control/matScan/theta 91 0 90
/control/matScan/phi 361 0 360
/control/matScan/scan
```

Old sidloi3 model

(for example, from lcsim.org/detectors/sidloi3.zip)

`/cvmfs/ilc.desy.de/clic/slicv3r0p3/scripts/slic.sh -m x.mac -g sidloi3.lcdd > sidloi3Mat.txt`

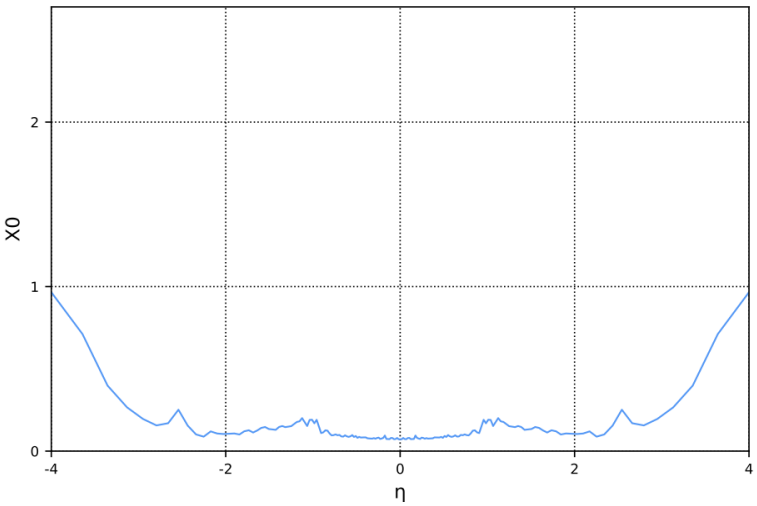
x.mac

```
/control/matScan/region TrackingRegion
/control/matScan/scan
```

Example plotting script (Julia)

matScanPlot.jl

```
using Plots
theta = Vector{Float64}()
x0 = Vector{Float64}()
lambda = Vector{Float64}()
open(ARGS[1]) do f
        for line in readlines(f)
                fields = split(line)
                if length(fields) == 0
                        continue
                end
                if fields[1] != "ave."
                        continue
                end
                t = parse(Float64, fields[5])
                if t % 1 != 0
                        continue
                end
                push!(theta, t)
                push!(x0, parse(Float64, fields[8]))
                push!(lambda, parse(Float64, fields[9]))
        end
end
plot(theta, x0, legend=false)
xlabel!("theta (degrees)")
ylabel!("X0")
savefig("t.pdf")
```



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