dE/dx calibration guide

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Abstract

This is a guide to using the software developed by Juan Romero. The software allows us to calibration dE/dx values as a function of $\beta\gamma$, we then use these values in fixing the Gaussian centroids of the dE/dx distributions. This allows us to identify particles.

Now this code is used in conjunction with **fits.C** when you run the fitting script (with a name similar to **lsf/pipy0h1fn.lsf**).

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1 necessary files

Get the code on `PDSF`,

```
cp ~romero/ratio/dedxcal.C ~/yourdir/
```

where `yourdir` is the directory you want to work in.

2 calibrate dE/dx

1. **fits.C** reads the 7 parameters from a **dedx.cal** file for each case (rapidity, centrality, particle type). The file should include 7 lines, with m1 on line 1, m2 on line 2,$\cdots$, m7 on line7. The script reads this file to calculate the centroids of dE/dx Gaussians.

2. edit lsf file, here let's assume it's called **fits/py0h1/pi/fits.lsf** (positive pions, y = 0, keyword = h1). Here you can change parameter `a0` to 1 or 0. Set it to 1 if you want to run the calibration.

Near the end of the file, you can see the script calling root4star to execute **dedxcal.C**. Make sure it's not commented out.

3. when you are ready to run, do

```
source fits/py0h1/pi/fits.lsf
```

4. when finished, a new **dedx.cal** file will be created. The old file will be renamed **dedx.calold**. Some gif files of Bethe-Bloch curves may also be created.

5. look at the dE/dx Gaussians. If the fits are poor, allow more movement in centroids and maybe widths. Then rerun the fitting script. If they look good, keep narrowing the movements. Rerun the script. Do it until you can fix all the centroids.