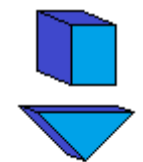# Absorber Splitter II

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02.17.14

# Absorber Splitter(1/2)

- ▶ Now with improved time

- ▶ Old COSY flat absorber with 25 splits = 2:10

- ▶ 45/45 10 splits is still "competitive" with ICOOL time, but much optimization can still happen

  - ➢ Max region length was ~26 cm

|  | COSY (10) | COSY (25) | ICOOL |
|---|---|---|---|
| Flat | 0:47 | 0:54 | 0:57 |
| 45/45 | 1:32 | 2:38 | 1:14 |

# Absorber Splitter (2/2)

- ▶ 45/45 absorber seemingly works after 50 splits, but not bad after 10

  - ➢ For 10 splits, worst % is 1 part in 250, best is roughly 1 part in 32,000.

- ▶ 30/60 is not so immediately fortunate

| 10 | COSY | ICOOL | % | Accepted % |
|---|---|---|---|---|
| p | 188.19 | 188.17 | 0.0101 | 0.0034 |
| $\sigma$p | 20.83 | 20.87 | 0.165 | 0.039 |
| t | 3.210 | 3.210 | 0.0031 | 0.0010 |
| $\sigma$t | 0.086 | 0.087 | 0.40 | 0.11 |

| 25 | COSY | ICOOL | % | Accepted % |
|---|---|---|---|---|
| p | 188.19 | 188.17 | 0.0074 | 0.0034 |
| $\sigma$p | 20.83 | 20.87 | 0.170 | 0.039 |
| t | 3.210 | 3.210 | 0.0031 | 0.0010 |
| $\sigma$t | 0.086 | 0.087 | 0.40 | 0.11 |

| 50 | COSY | ICOOL | % | Accepted % |
|---|---|---|---|---|
| p | 188.18 | 188.17 | 0.0016 | 0.0034 |
| $\sigma$p | 20.83 | 20.87 | 0.162 | 0.039 |
| t | 3.210 | 3.210 | 0.0000 | 0.0010 |
| $\sigma$t | 0.086 | 0.087 | 0.29 | 0.11 |

3

# End Distribution Method (1/3)

- Quickly realized I could not subtract deterministic from full simulation to get just the stochastic part (difference of Gaussians)
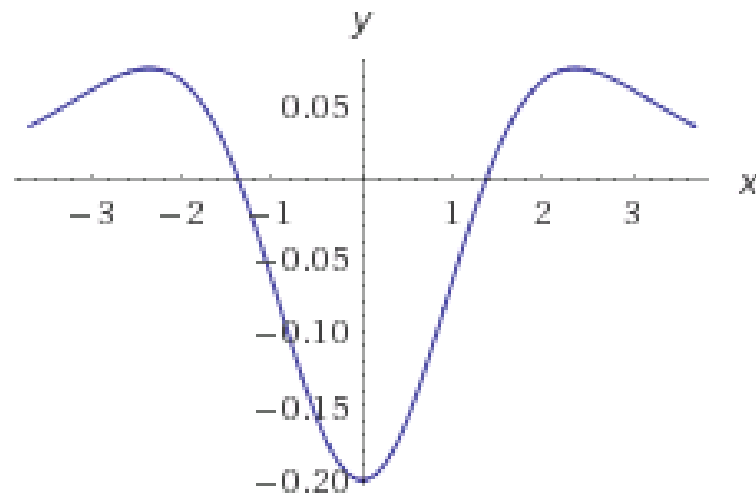
# End Distribution Method (2/3)

- Distribution method looks good except for σt.
- Blame it on poor RNG? (only good to ~5%)

| 10 | COSY | AVG ICOOL | % | Accepted % |
|---|---|---|---|---|
| pz | 187.98 | 188.19 | 0.110 | 0.005 |
| σpz | 21.02 | 20.79 | 1.10 | 0.035 |
| t | 1.99 | 1.99 | 0.01 | 0.001 |
| σt | 0.0439 | 0.053 | 17.8 | 0.27 |

# Distribution Method (3/3)

▶ Time does not fit a Gaussian distribution

▶ Better to use Gauss1(X, NX, DX, SIGMA, IP, MFD, ERR) ?