

## Summary: Run Nov. 2003

Data was taken at three beam momenta within a COSY “supercycle” for 21h (CH<sub>2</sub>) and 4h(C)

**1042 MeV/c**  $T_d = 270$  MeV. vector and tensor analyzing power known (Sekiguchi et al. Phys. Rev. C**65**, 034003 (2002)).

calibrate beam polarizations

**1850 MeV/c** SPIN@COSY beam momentum.

determine vector- and tensor analyzing powers

**2400 MeV/c** Momentum where ANKE measures  $\vec{d}p \rightarrow {}^3\text{He}\pi^0$

determine vector- and tensor analyzing powers and compare to ANKE results

The source was setup using the three transitions:

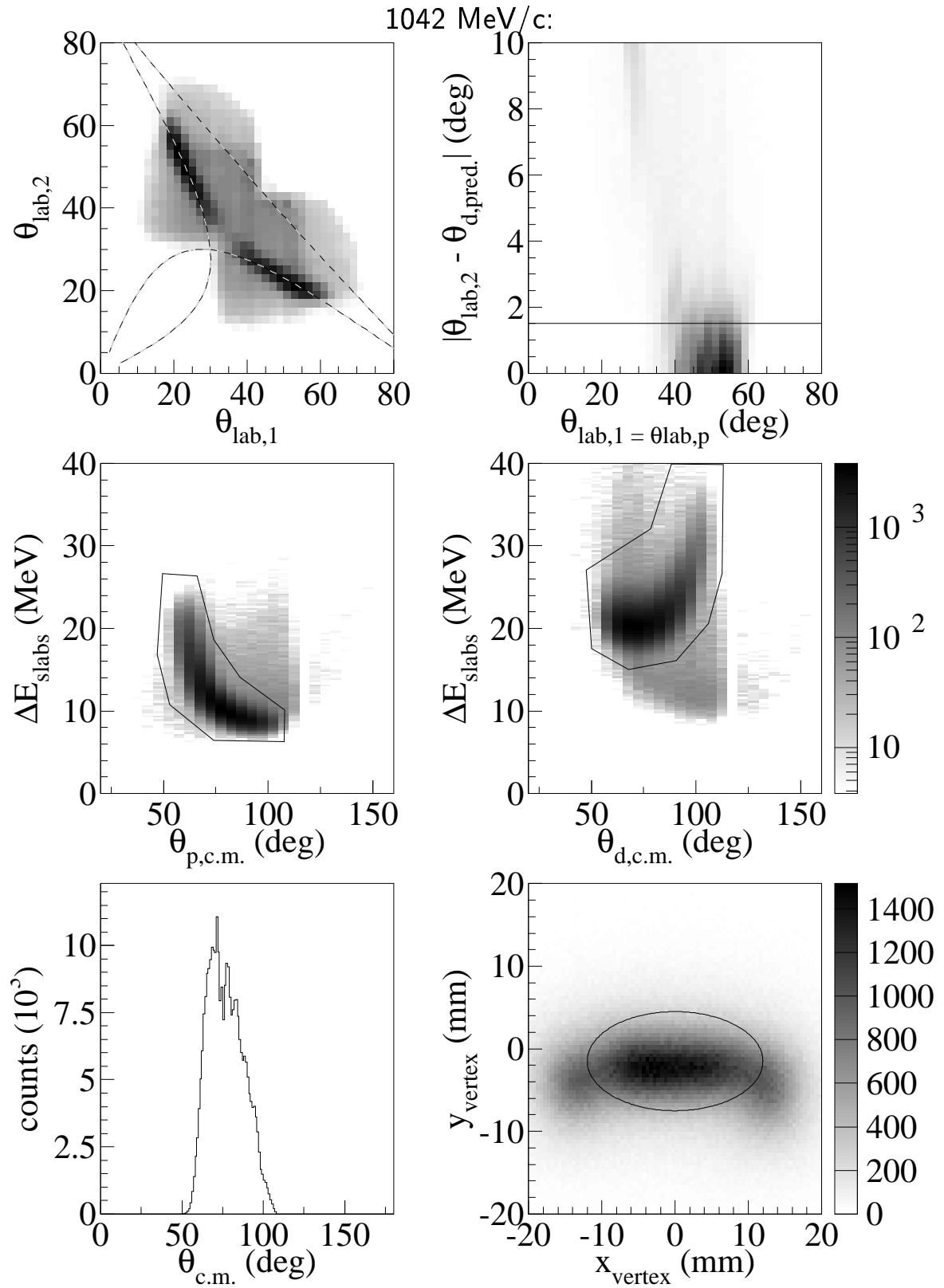
**RFT1** 3  $\Leftrightarrow$  5

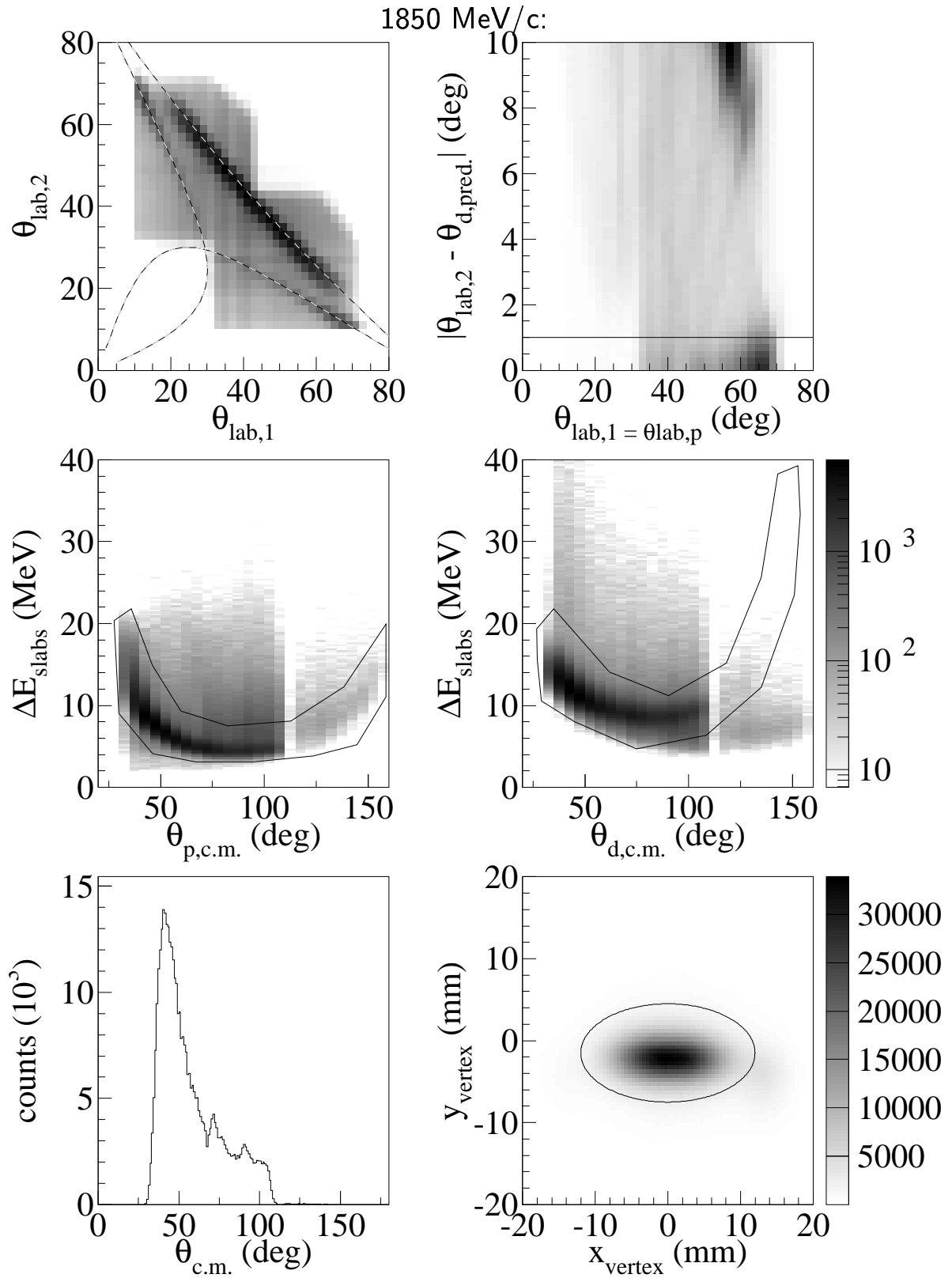
**RFT2** 2  $\Leftrightarrow$  6

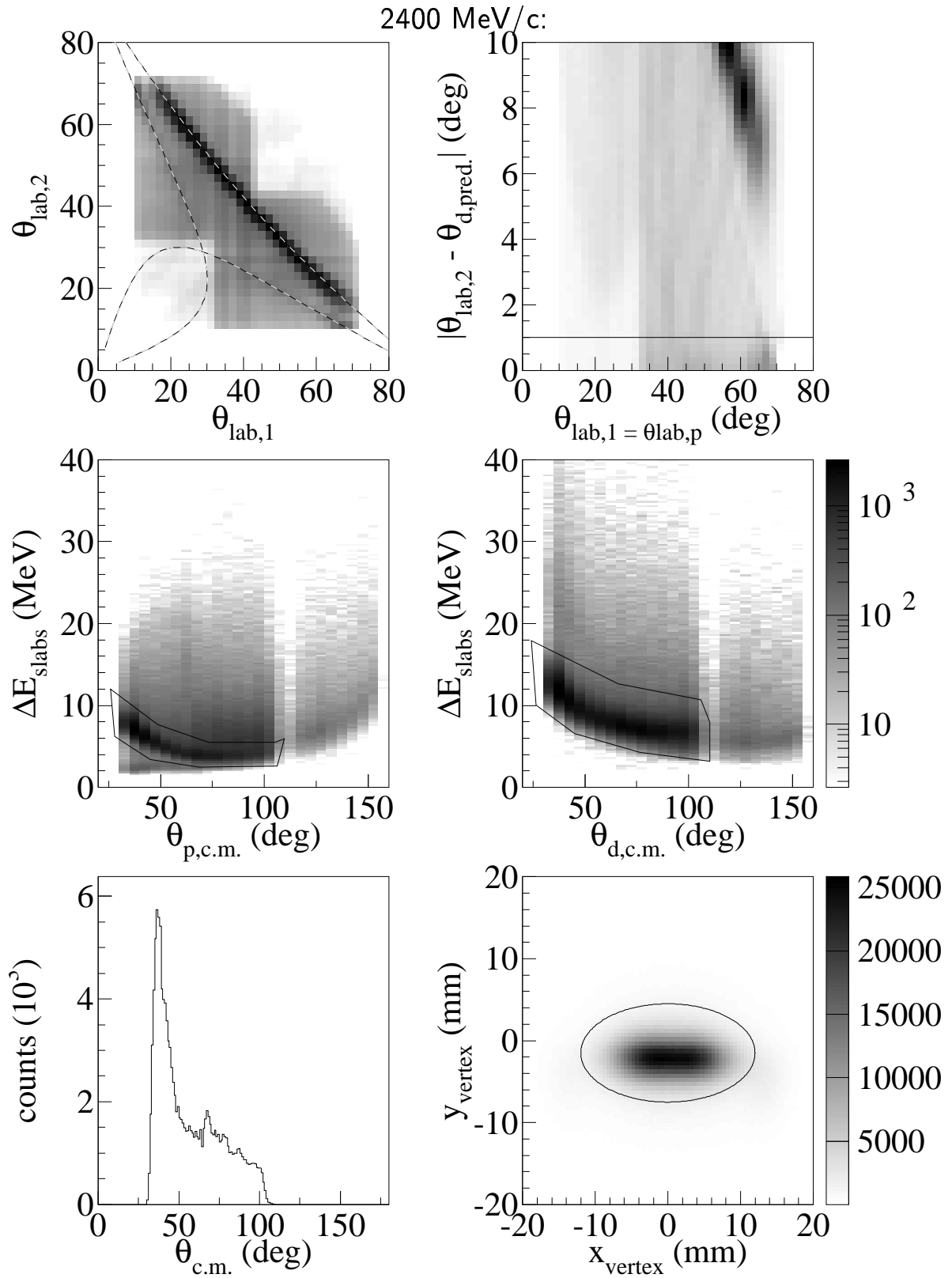
**RFT3** 1  $\Leftrightarrow$  4, 2  $\Leftrightarrow$  3, and 5  $\Leftrightarrow$  6 (weak-field)

| Bits | state | optimal  |        |
|------|-------|----------|--------|
|      |       | Pz       | Pzz    |
|      |       |          |        |
| 000  | 0     | 0.000 /  | 0.000  |
| 001  | 1     | -0.667 / | 0.000  |
| 010  | 2     | 0.333 /  | 1.000  |
| 011  | 3     | -0.333 / | -1.000 |
| 100  | 4     | 0.500 /  | -0.500 |
| 101  | 5     | -1.000 / | 1.000  |
| 110  | 6     | 1.000 /  | 1.000  |
| 111  | 7     | -0.500 / | -0.500 |

**ALL RESULTS ARE PRELIMINARY**







## Polarization from 1042 MeV/c data

Fit to data acquired in the angular range  $\theta_{c.m.} = 65 - 95^\circ$ .

(1) relative luminosities fixed by SEM, all polarizations free

| Bits | state | Pz     |     | Pzz   |        |     | optimal Pz/Pzz |                 |
|------|-------|--------|-----|-------|--------|-----|----------------|-----------------|
| 000  | 0     | -0.002 | + - | 0.038 | 0.139  | + - | 0.102          | 0.000 / 0.000   |
| 001  | 1     | -0.512 | + - | 0.038 | 0.178  | + - | 0.101          | -0.667 / 0.000  |
| 010  | 2     | 0.285  | + - | 0.039 | 0.714  | + - | 0.099          | 0.333 / 1.000   |
| 011  | 3     | -0.258 | + - | 0.036 | -0.513 | + - | 0.101          | -0.333 / -1.000 |
| 100  | 4     | 0.378  | + - | 0.036 | -0.161 | + - | 0.098          | 0.500 / -0.500  |
| 101  | 5     | -0.696 | + - | 0.039 | 0.656  | + - | 0.099          | -1.000 / 1.000  |
| 110  | 6     | 0.764  | + - | 0.036 | 0.658  | + - | 0.094          | 1.000 / 1.000   |
| 111  | 7     | -0.360 | + - | 0.037 | -0.282 | + - | 0.102          | -0.500 / -0.500 |

(2) relative luminosities NOT fixed by SEM, all polarizations free

| Bits | state | Pz     |     | Pzz   |        |     | optimal Pz/Pzz |                 |
|------|-------|--------|-----|-------|--------|-----|----------------|-----------------|
| 000  | 0     | 0.068  | + - | 0.065 | 0.122  | + - | 0.113          | 0.000 / 0.000   |
| 001  | 1     | -0.442 | + - | 0.065 | 0.145  | + - | 0.113          | -0.667 / 0.000  |
| 010  | 2     | 0.358  | + - | 0.067 | 0.704  | + - | 0.109          | 0.333 / 1.000   |
| 011  | 3     | -0.192 | + - | 0.061 | -0.540 | + - | 0.112          | -0.333 / -1.000 |
| 100  | 4     | 0.446  | + - | 0.061 | -0.165 | + - | 0.109          | 0.500 / -0.500  |
| 101  | 5     | -0.625 | + - | 0.066 | 0.621  | + - | 0.112          | -1.000 / 1.000  |
| 110  | 6     | 0.831  | + - | 0.062 | 0.662  | + - | 0.105          | 1.000 / 1.000   |
| 111  | 7     | -0.293 | + - | 0.062 | -0.312 | + - | 0.114          | -0.500 / -0.500 |

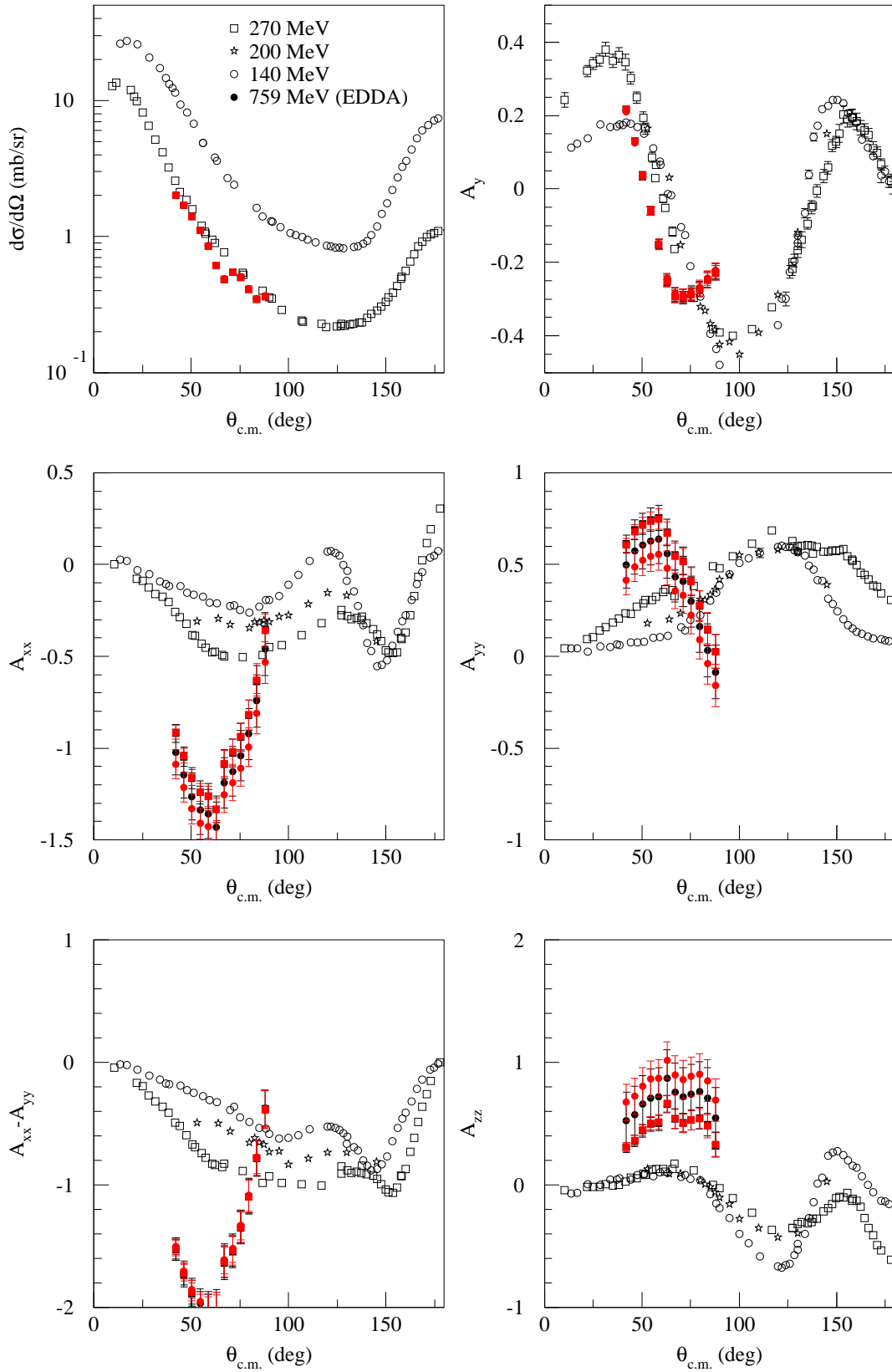
(3) relative luminosities NOT fixed by SEM, all polarizations free  
except for  $PZ(0) = 0.0$

| Bits | state | Pz        |       | Pzz       |       | optimal Pz/Pzz |        |
|------|-------|-----------|-------|-----------|-------|----------------|--------|
| 000  | 0     | 0.000     |       | 0.139 +-  | 0.113 | 0.000 /        | 0.000  |
| 001  | 1     | -0.506 +- | 0.023 | 0.176 +-  | 0.110 | -0.667 /       | 0.000  |
| 010  | 2     | 0.292 +-  | 0.023 | 0.714 +-  | 0.110 | 0.333 /        | 1.000  |
| 011  | 3     | -0.252 +- | 0.022 | -0.515 +- | 0.110 | -0.333 /       | -1.000 |
| 100  | 4     | 0.386 +-  | 0.023 | -0.163 +- | 0.111 | 0.500 /        | -0.500 |
| 101  | 5     | -0.689 +- | 0.024 | 0.653 +-  | 0.108 | -1.000 /       | 1.000  |
| 110  | 6     | 0.771 +-  | 0.023 | 0.659 +-  | 0.106 | 1.000 /        | 1.000  |
| 111  | 7     | -0.354 +- | 0.023 | -0.284 +- | 0.111 | -0.500 /       | -0.500 |

(4) relative luminosities NOT fixed by SEM, all polarizations free  
except for  $PZ(0) = Pzz(0) = 0$

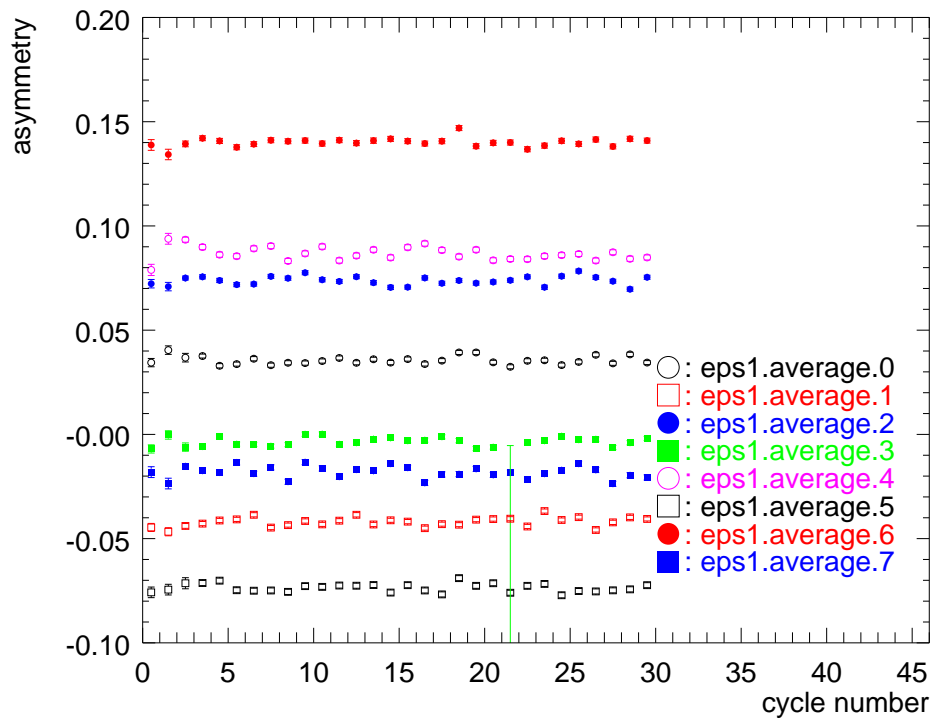
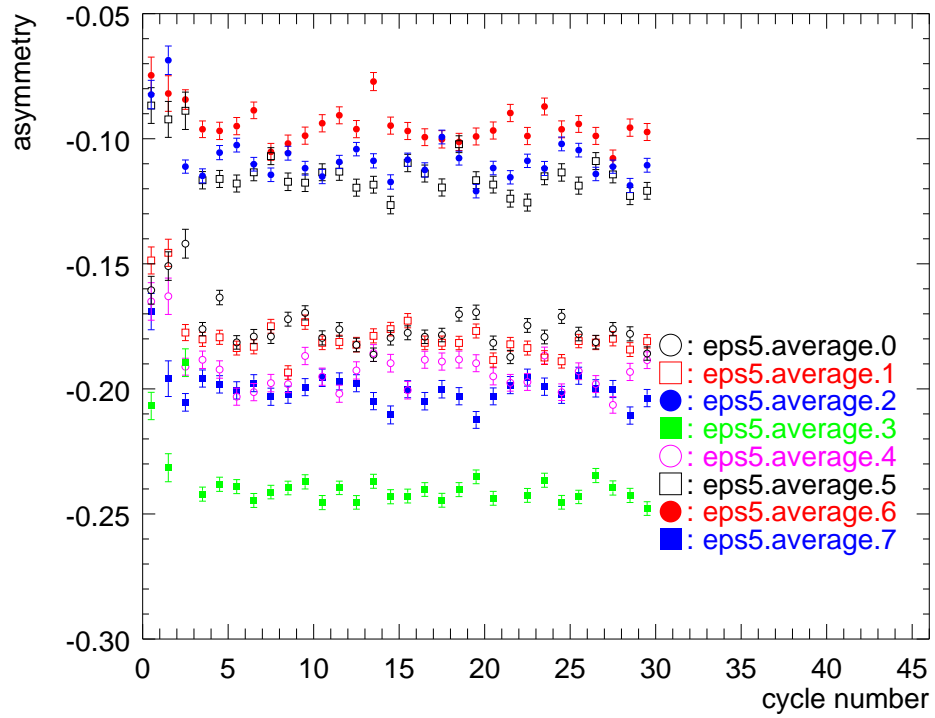
| Bits | state | Pz        |       | Pzz       |       | optimal Pz/Pzz |        |
|------|-------|-----------|-------|-----------|-------|----------------|--------|
| 000  | 0     | 0.000     |       | 0.000     |       | 0.000 /        | 0.000  |
| 001  | 1     | -0.499 +- | 0.021 | 0.057 +-  | 0.051 | -0.667 /       | 0.000  |
| 010  | 2     | 0.290 +-  | 0.023 | 0.594 +-  | 0.050 | 0.333 /        | 1.000  |
| 011  | 3     | -0.248 +- | 0.021 | -0.634 +- | 0.051 | -0.333 /       | -1.000 |
| 100  | 4     | 0.381 +-  | 0.022 | -0.282 +- | 0.052 | 0.500 /        | -0.500 |
| 101  | 5     | -0.682 +- | 0.022 | 0.537 +-  | 0.052 | -1.000 /       | 1.000  |
| 110  | 6     | 0.764 +-  | 0.022 | 0.545 +-  | 0.050 | 1.000 /        | 1.000  |
| 111  | 7     | -0.349 +- | 0.022 | -0.404 +- | 0.053 | -0.500 /       | -0.500 |

Comparison with K. Sekiguchi et al. Phys. Rev. C **65**, 034003 (2002)



### Scaler asymmetries

Run : 134 Experiment: 21 Date: 26-Nov-2003 15:36:39



## Things to do

### For next run

- make sure prior to data taking that we do not scatter of the fork supporting the fiber target! **We need better focusing at TP2**
- Need to calibrate scaler, otherwise measurement time will be long!