# Axial channeling

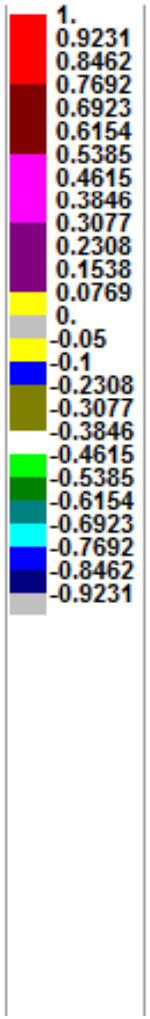
Yu.Chesnokov,

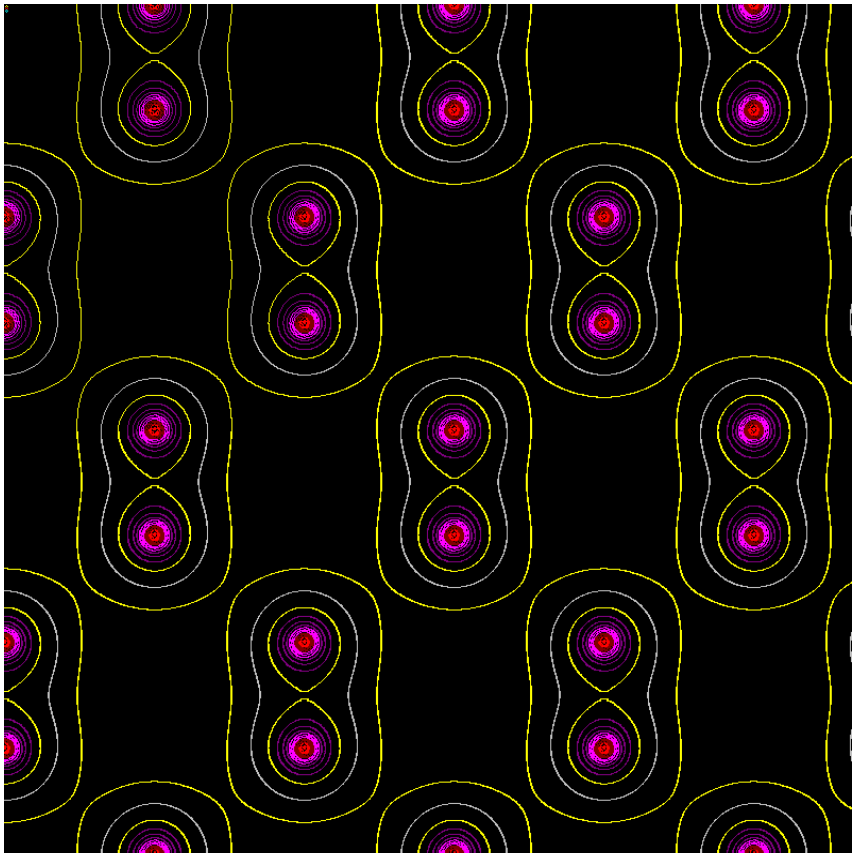
On behalf of H8RD22 collaboration

# Potential of <110>

FIG. 1

| | |
|---|---|
| TITLE | Potential |
| CRYSTAL | Si |
| Z | 14 |
| A | 28.09 |
| STRUCT. | D |
| a [A] | 5.43 |
| T-D, K | 640 |
| T, K | 300 |
| R [A] | 0.064515 |
| F(g) | exponsi |
| AXIS | < 1 0 1 > |
| Horiz. | < 1 0 -1 > |
| Vert. | < 0 1 0 > |
| x1/a | 0.353553 |
| y1/a | -0.5 |
| x2/a | 0.353553 |
| y2/a | 0.5 |
| MAX.VAL. | 129.1386 |
| MIN.VAL. | -11.12501 |
| FILE DAT | p110.si |
| FILE CLR | clr26_1.eqv |

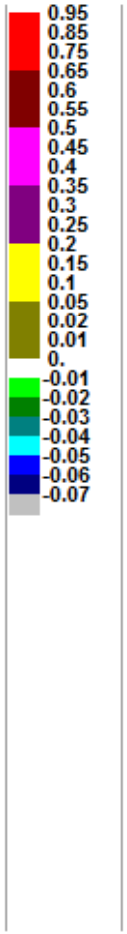


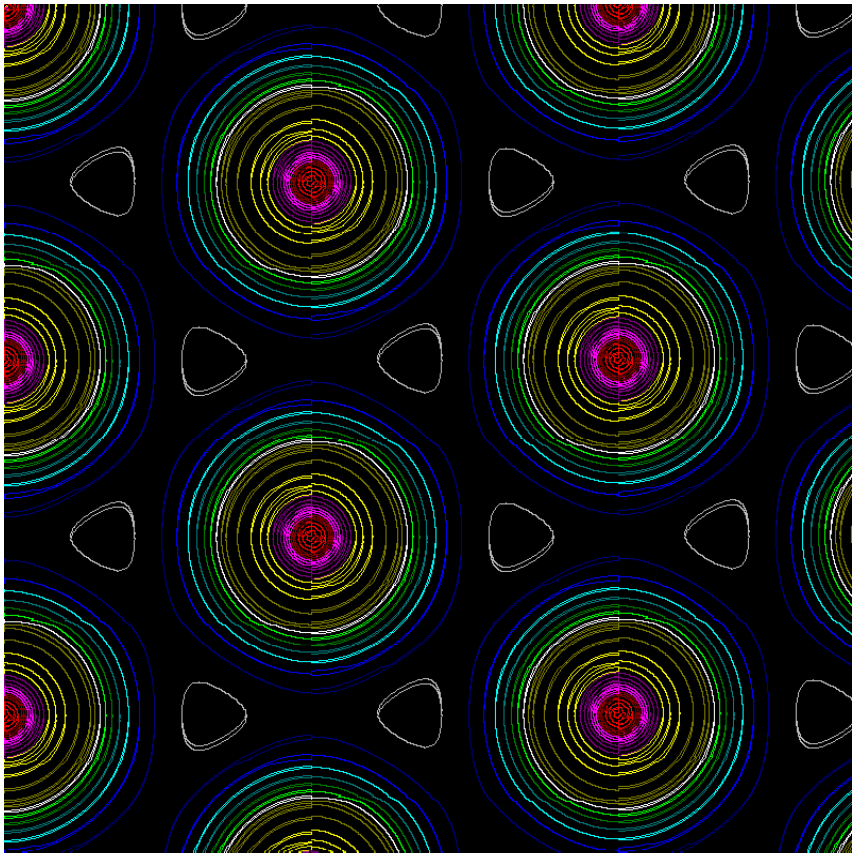



# Potential of <111>

FIG. 1

| | |
|---|---|
| TITLE | Potential |
| CRYSTAL | Si |
| Z | 14 |
| A | 28.09 |
| STRUCT. | D |
| a [A] | 5.43 |
| T-D, K | 640 |
| T, K | 300 |
| R [A] | 0.064515 |
| F(g) | exponsi |
| AXIS | < 1 1 1 > |
| Horiz. | < 0 1 -1 > |
| Vert. | < 2 -1 -1 > |
| x1/a | 0.353553 |
| y1/a | 0.204124 |
| x2/a | 0. |
| y2/a | -0.408248 |
| MAX.VAL. | 102.3127 |
| MIN.VAL. | -7.43732 |
| FILE DAT | p~111.si |
| FILE CLR | clr26_1.eqv |



# Some results had been already published in PRL101(2008)164801

- **High-efficiency deflection of high-energy protons through axial channeling in a bent crystal**
- Walter Scandale
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- Alexander S. Denisov, Yury A. Gavrikov ,Yuri M. Ivanov, Lyubov P. Lapina, Liudmila G. Malyarenko, Vyacheslav V. Skorobogatov, Vsevolod M. Suvorov, Sergey A. Vavilov
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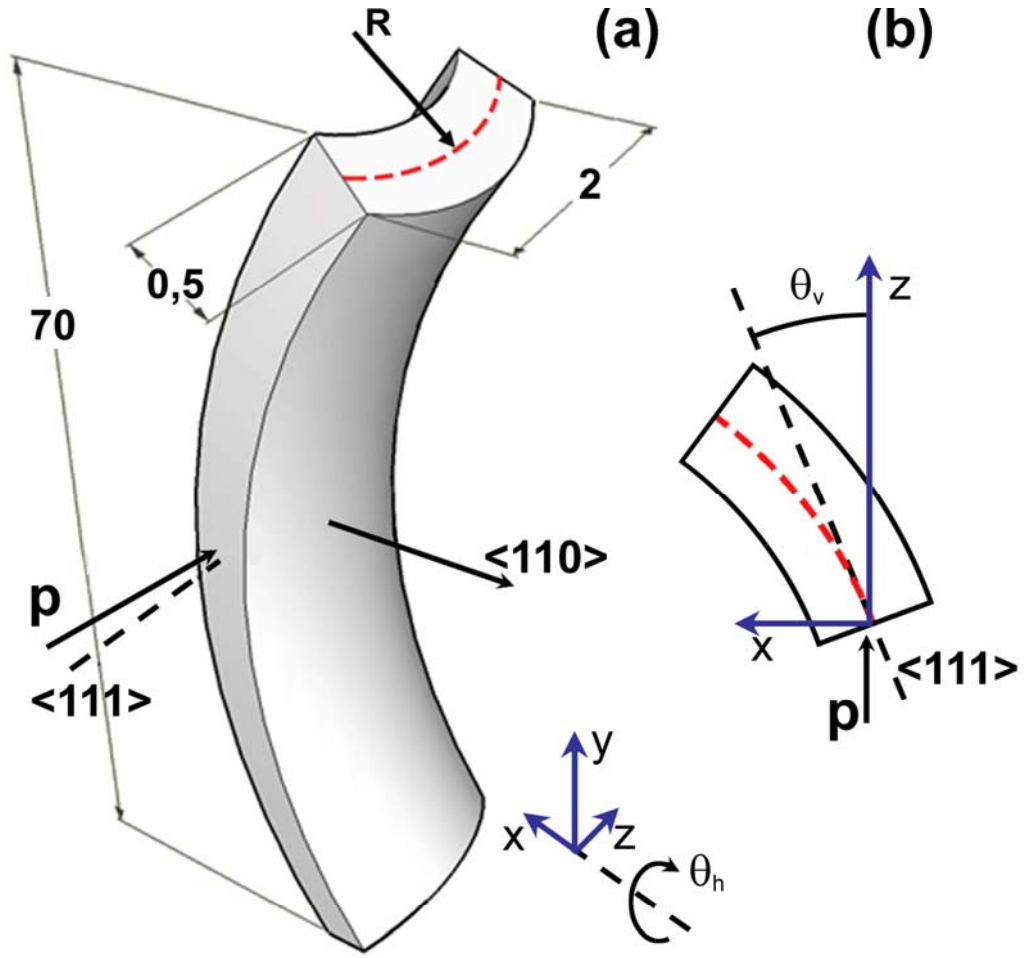
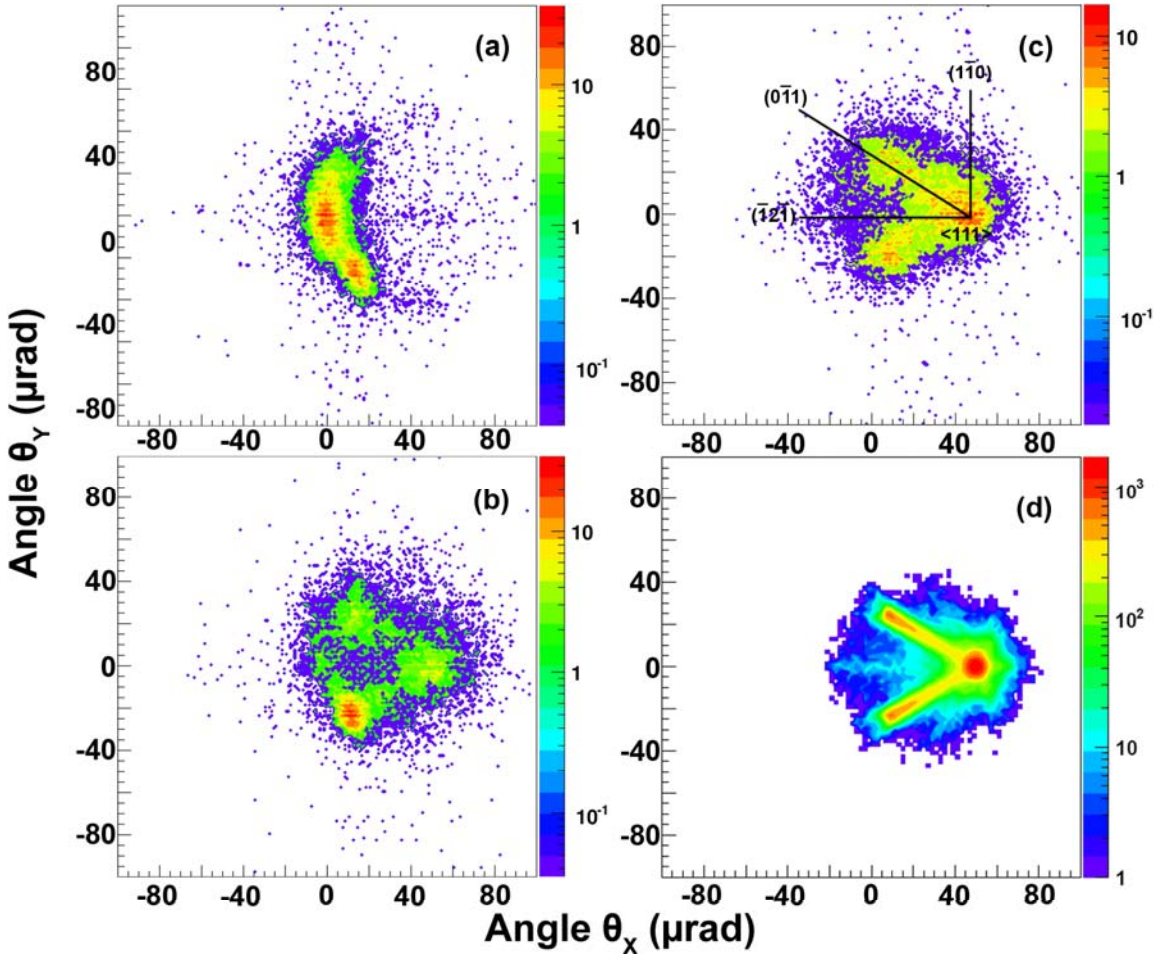
- Davide Bolognini, Said Hasan, A. Mozzanica, Michela Prest
- Università dell'Insubria, via Valleggio 11, 22100 Como, Italy & INFN Sezione di Milano, via Celoria 16, 20133 Milan, Italy

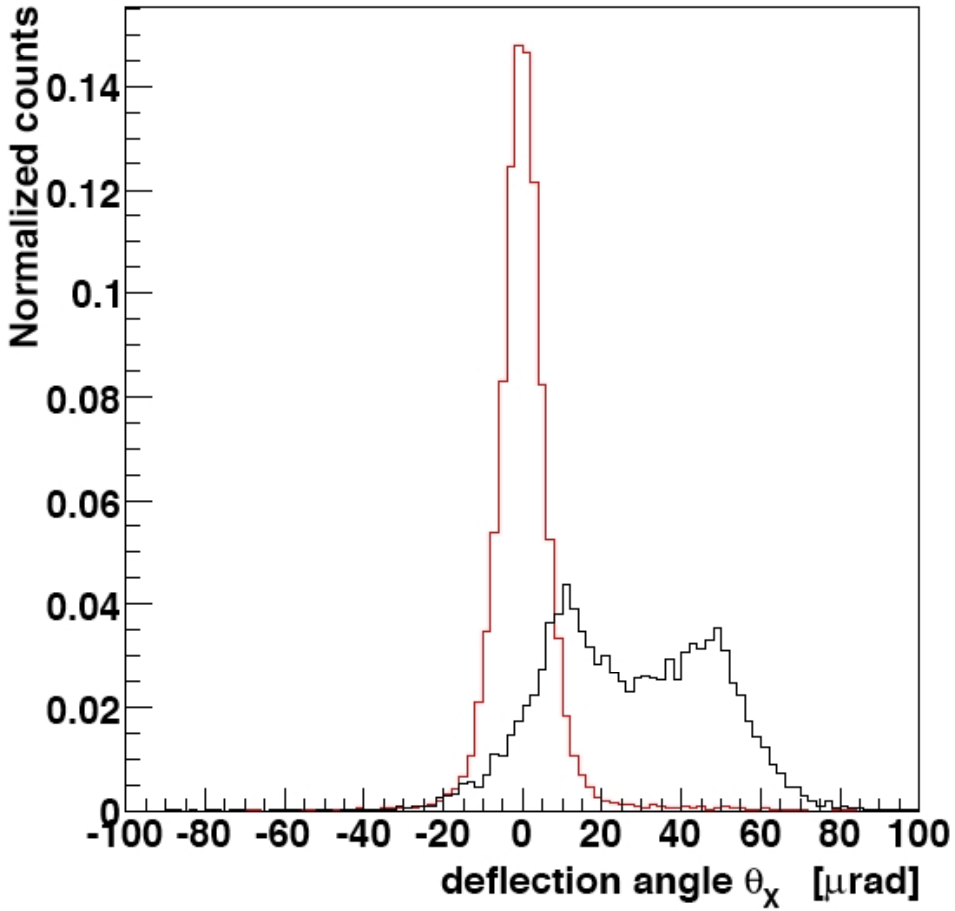
# Measurements were performed using Ferrara Strip-type crystal.



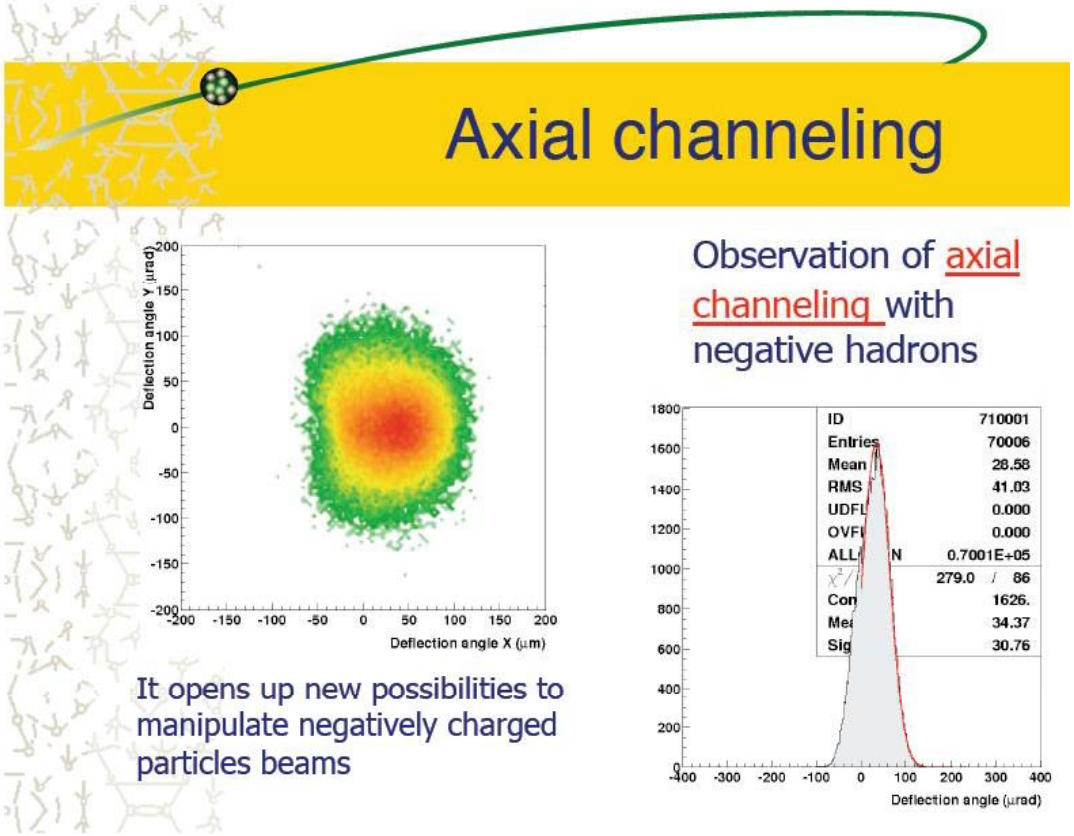
Beam intensity distribution as a function of horizontal and vertical deflections at some orientation angles



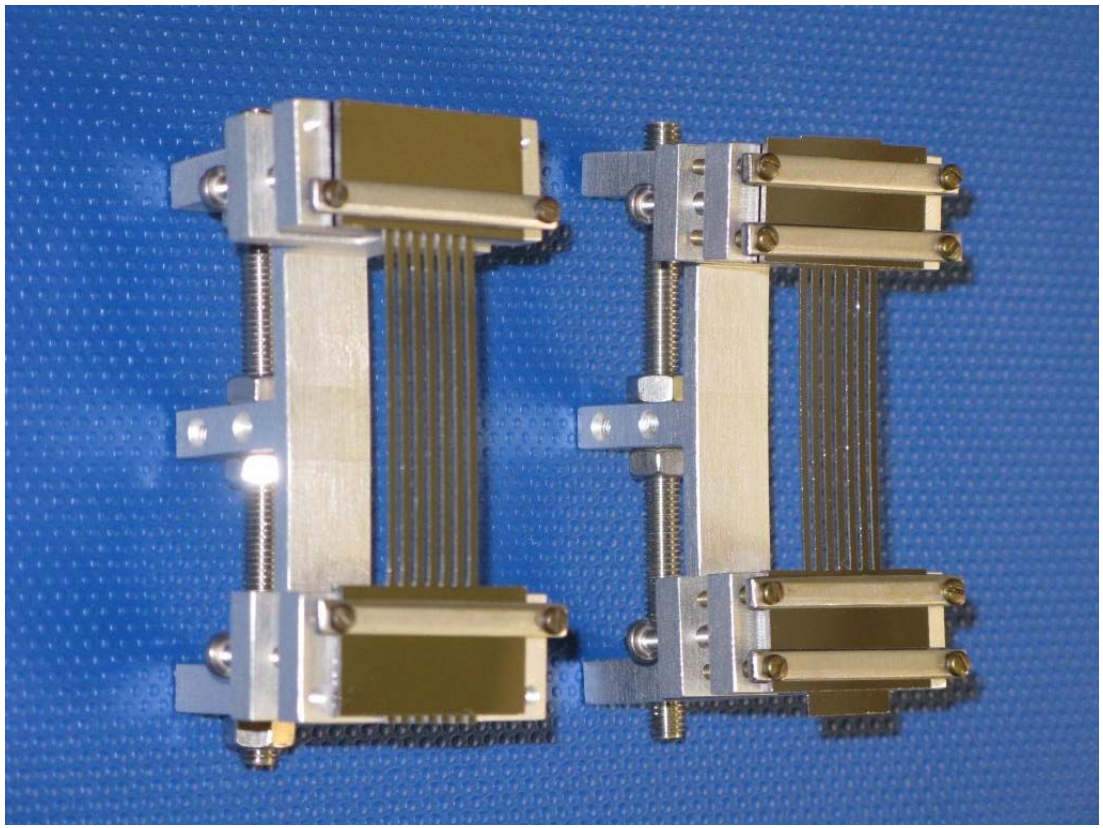
# Projection on the horizontal plane



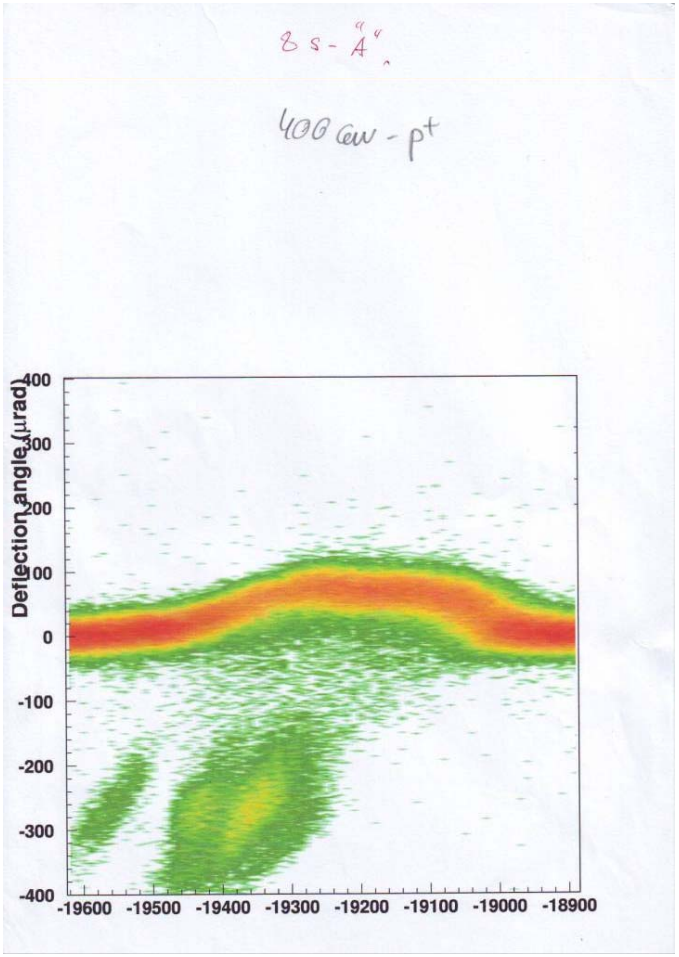
# Axial deflection of negative particles (from V.Guidi report on channeling-2008)

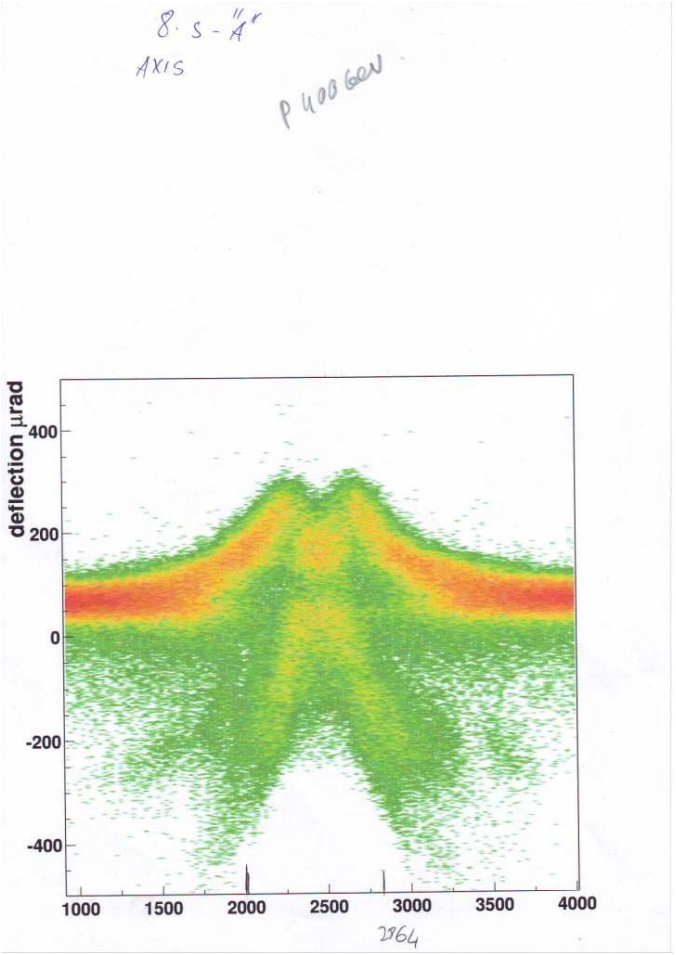


# Axial manipulations with multi-crystals (IHEP –technologies)

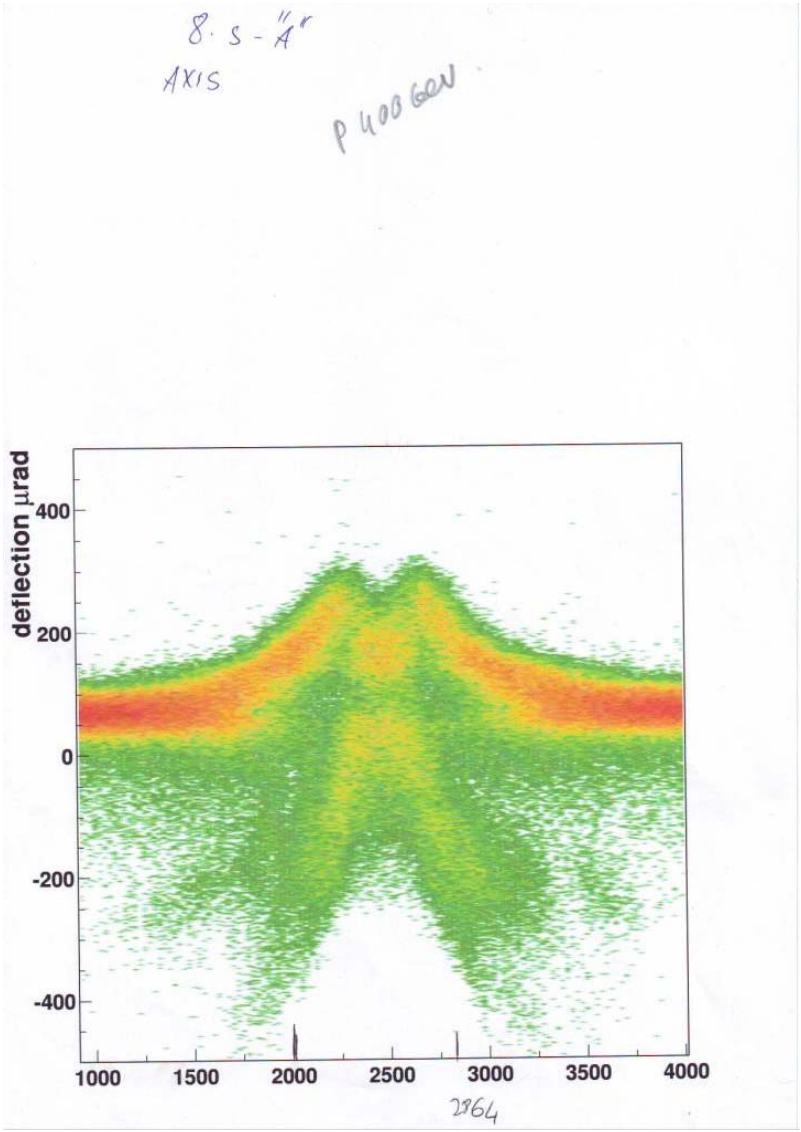


# Enhancement of deflection angle of 400 Gev protons up to 300 urad due to near-axial reflections

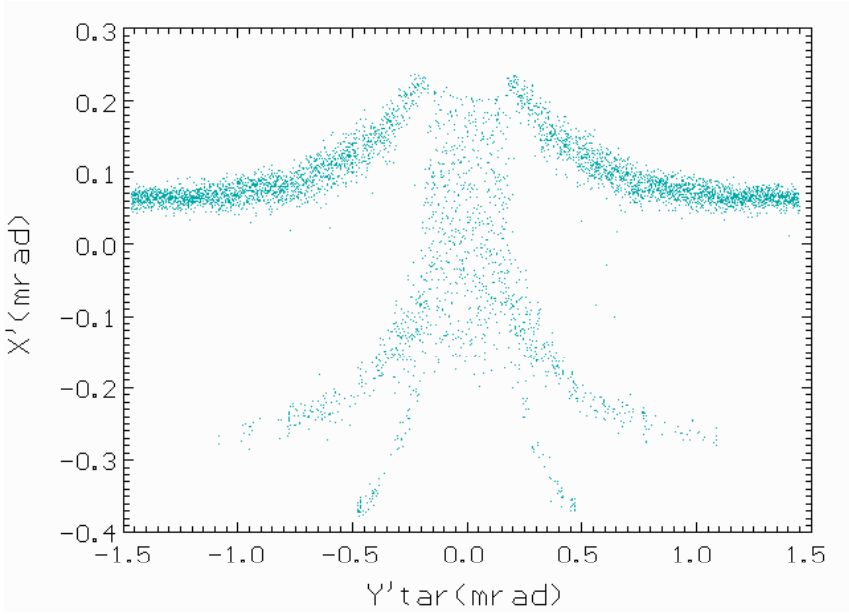


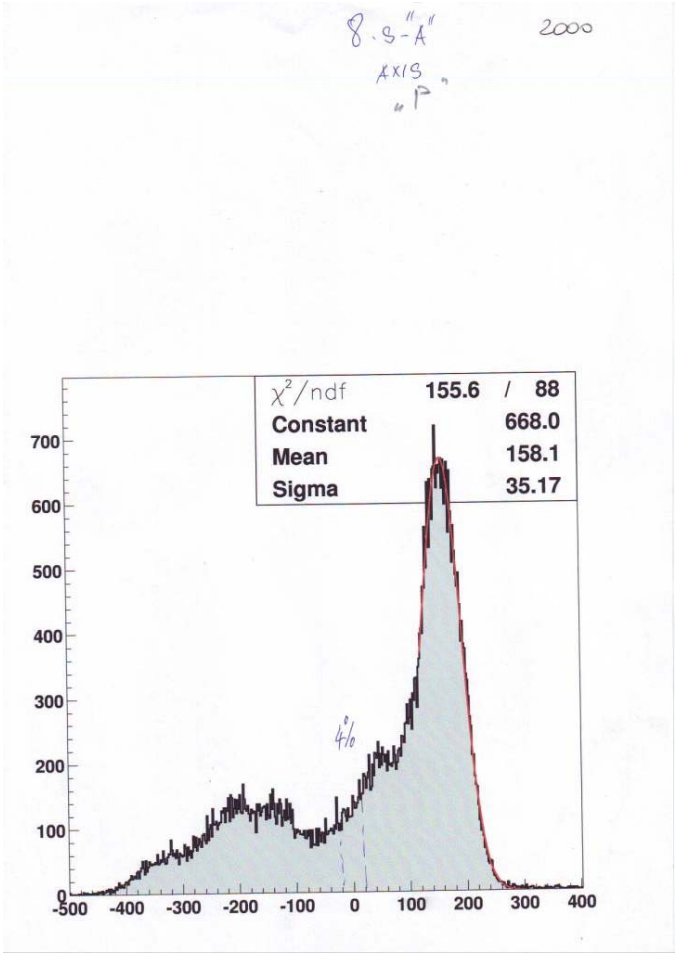
# Effect is confirmed by M-C simulations.

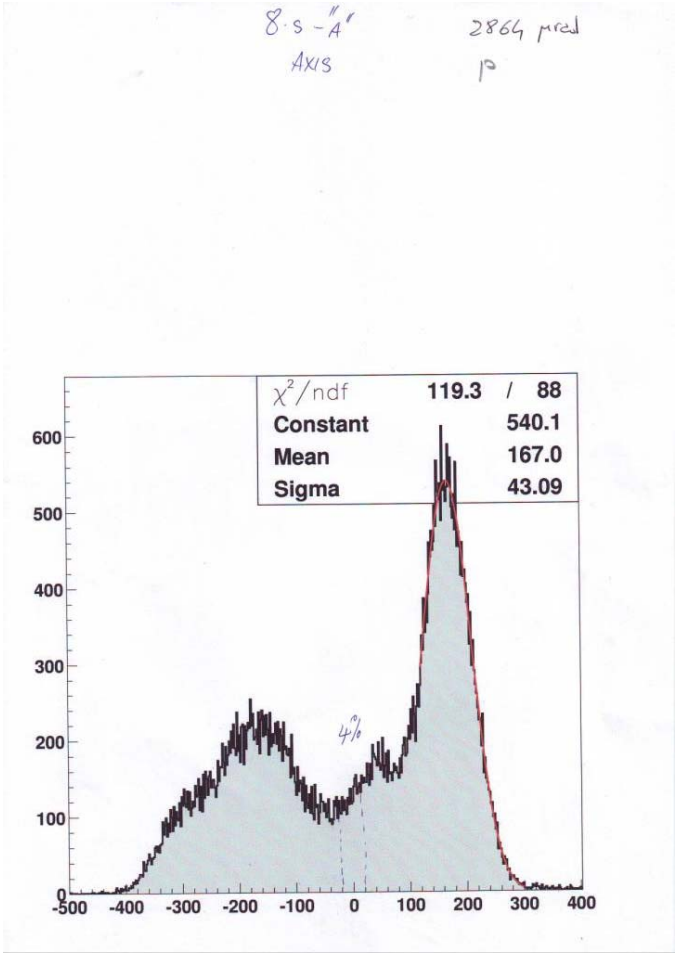



I.Yazynin

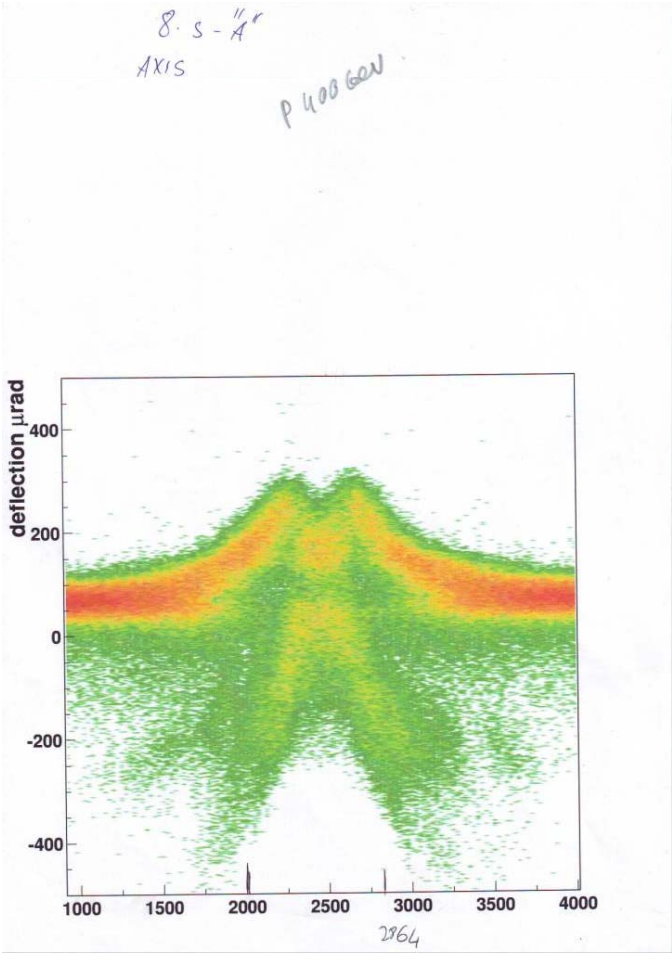


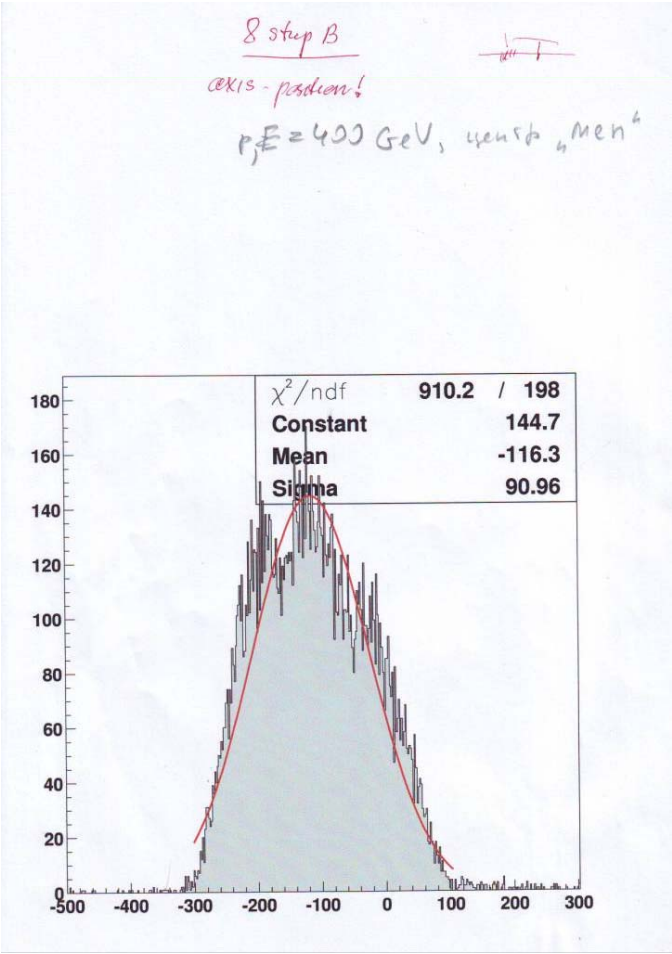
# Projection on horizontal plane – different cross-sections



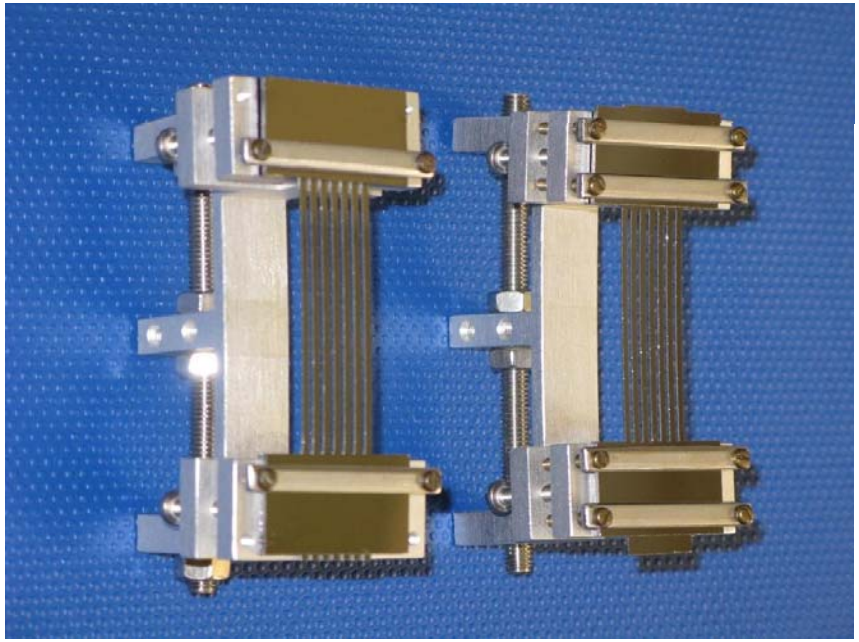



# Central cross-section

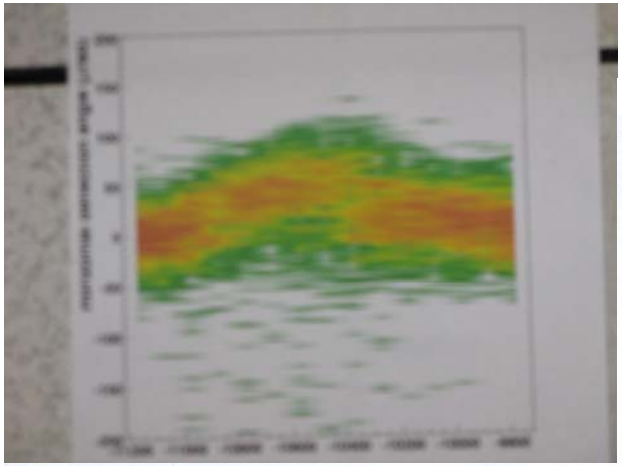


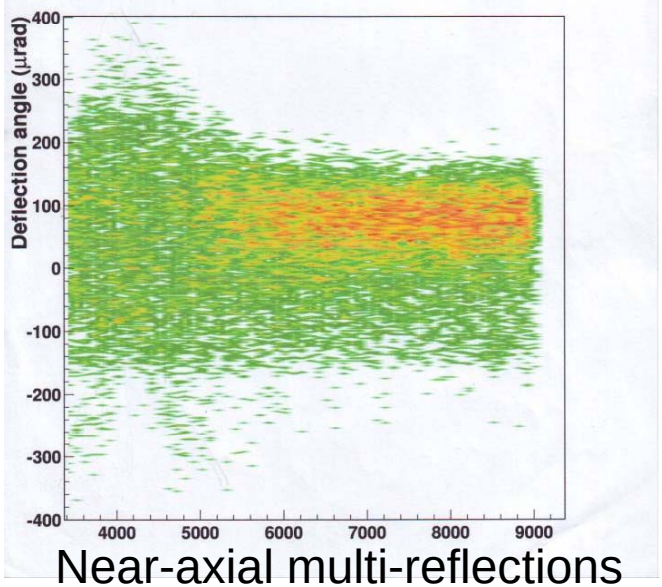



# Negative particles



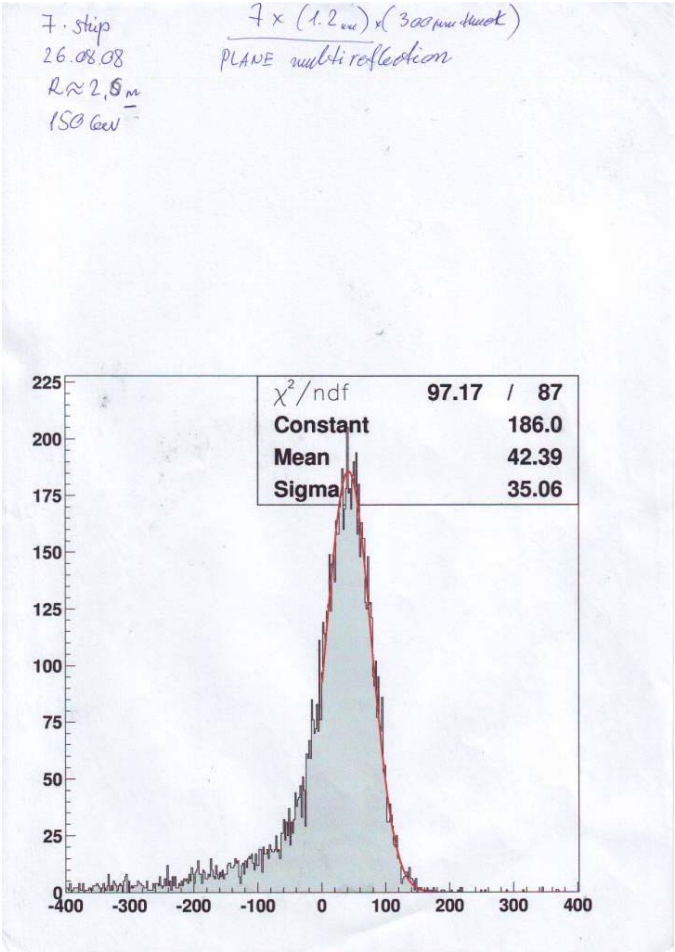
Planar multi-refrlectians

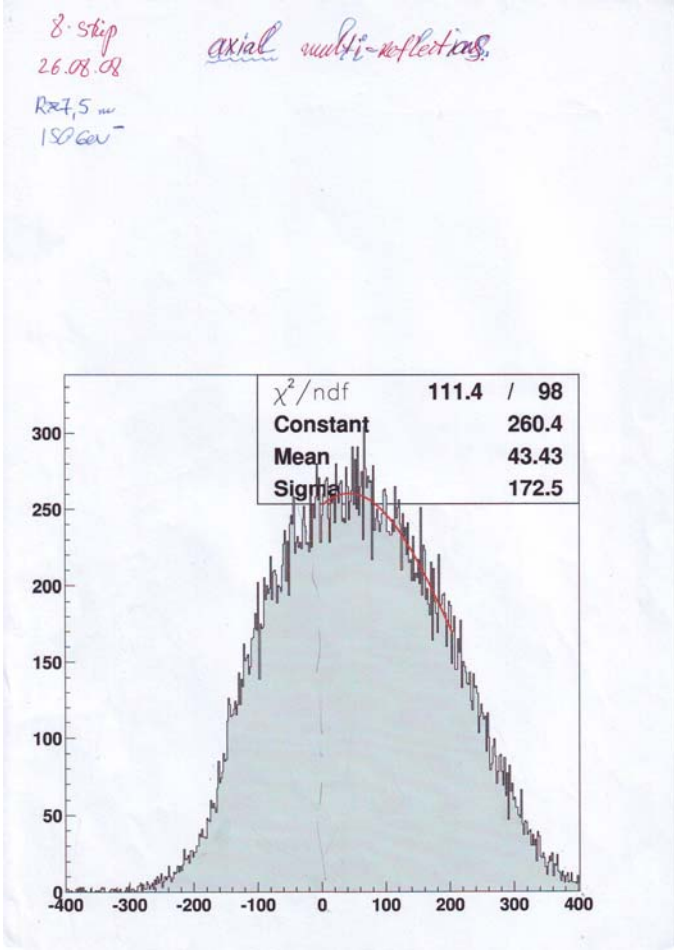





Near-axial multi-reflections

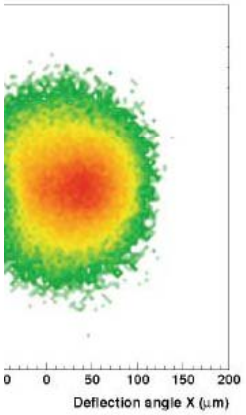
# Planar/axial projections



# Single-axial/ multi-planar/ multi-axial effects on negative 150 GeV particles

## Axial channeling

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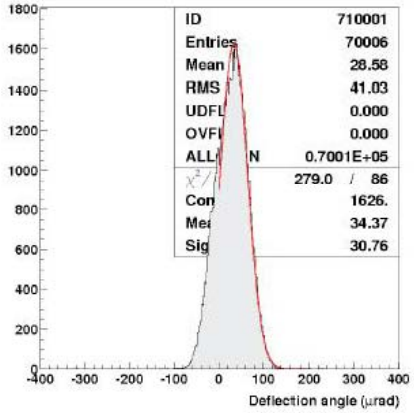
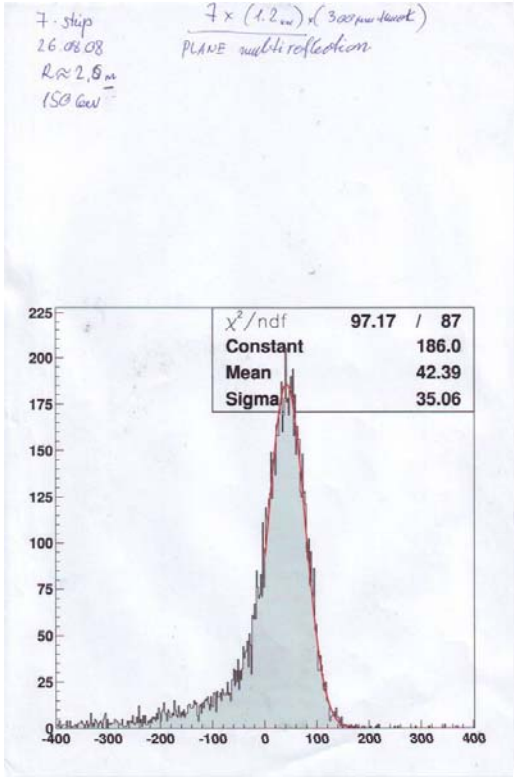
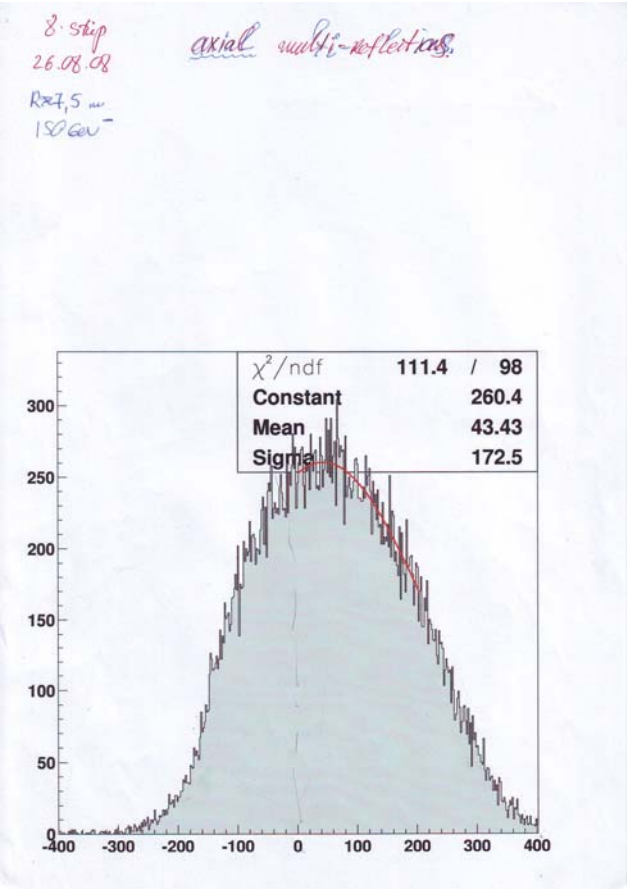
Observation of axial channeling with negative hadrons



# Methods of axial-case realization – modified IHEP goniometer