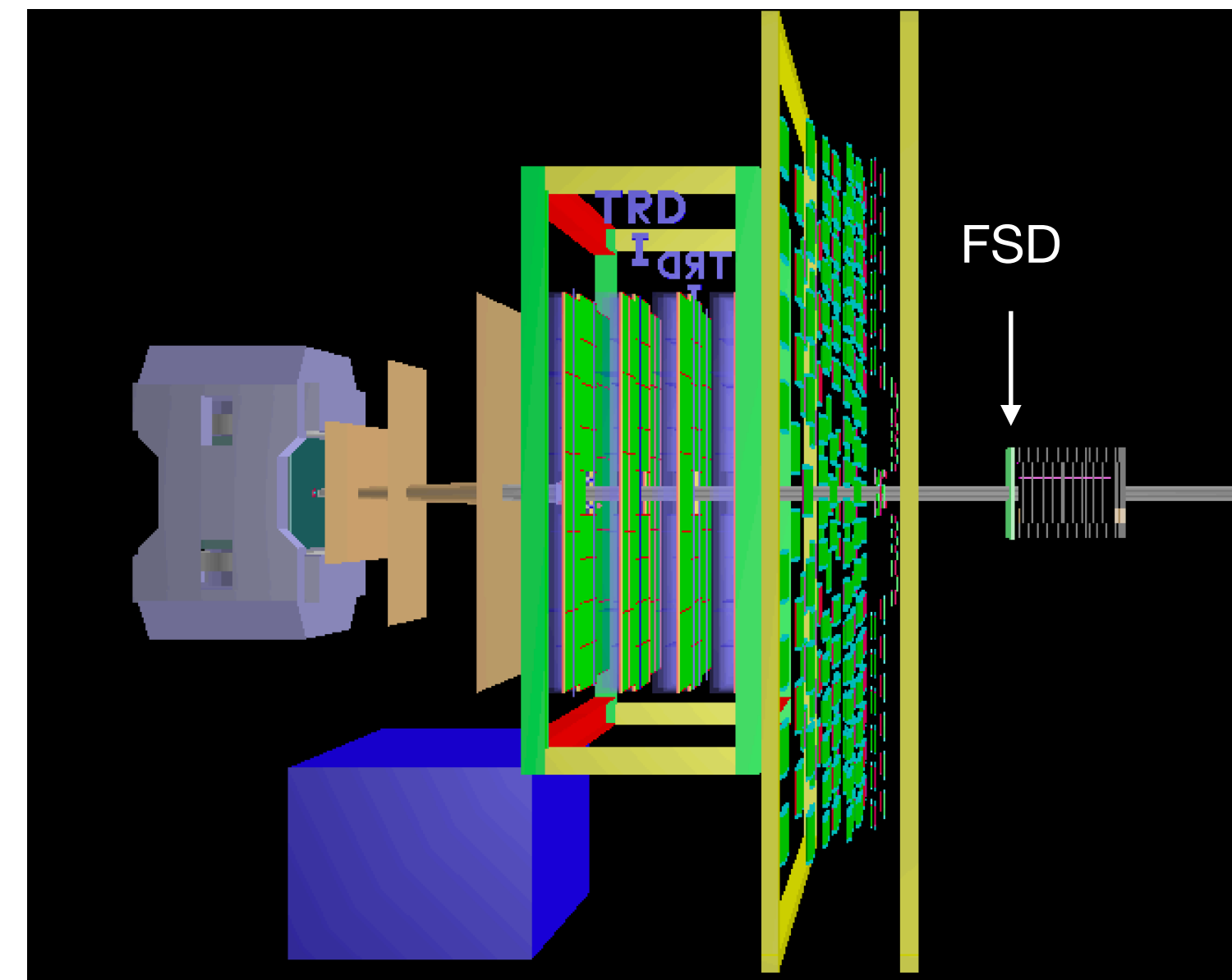# QN

Radim Dvořák
FNSPE CTU
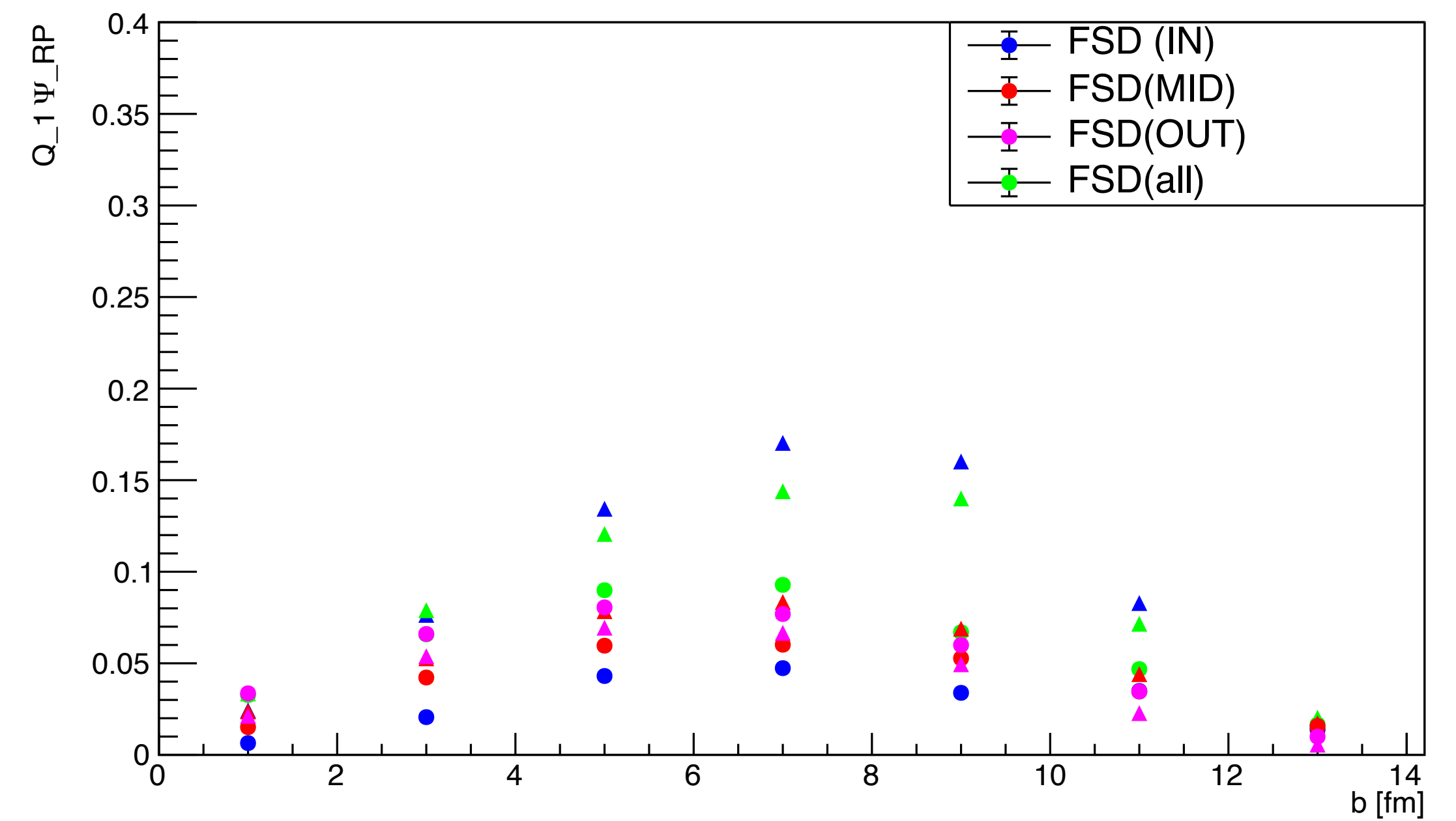
Setup

- Full CBM geometry

- 12 AGeV collisions

- DCM-QGSM model
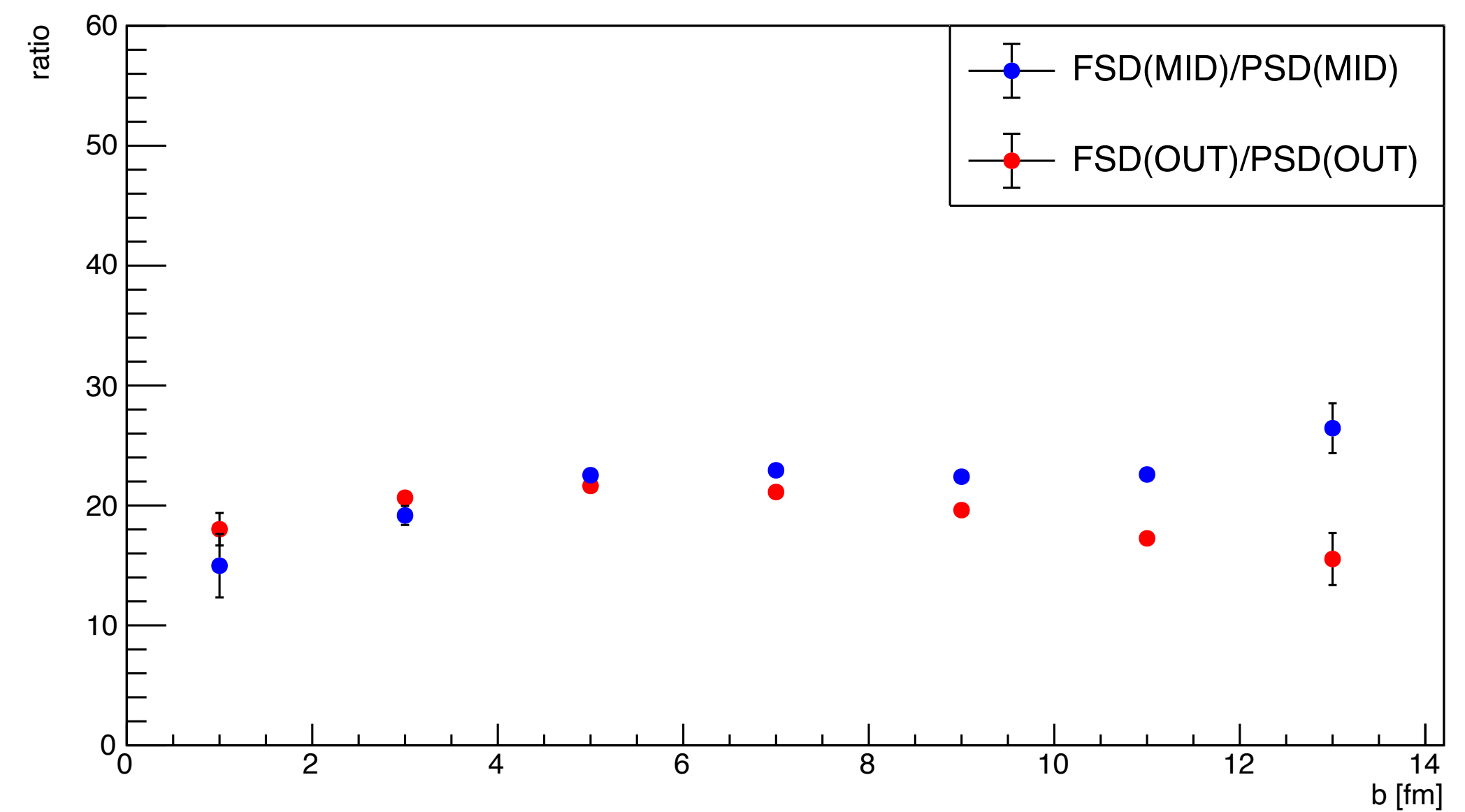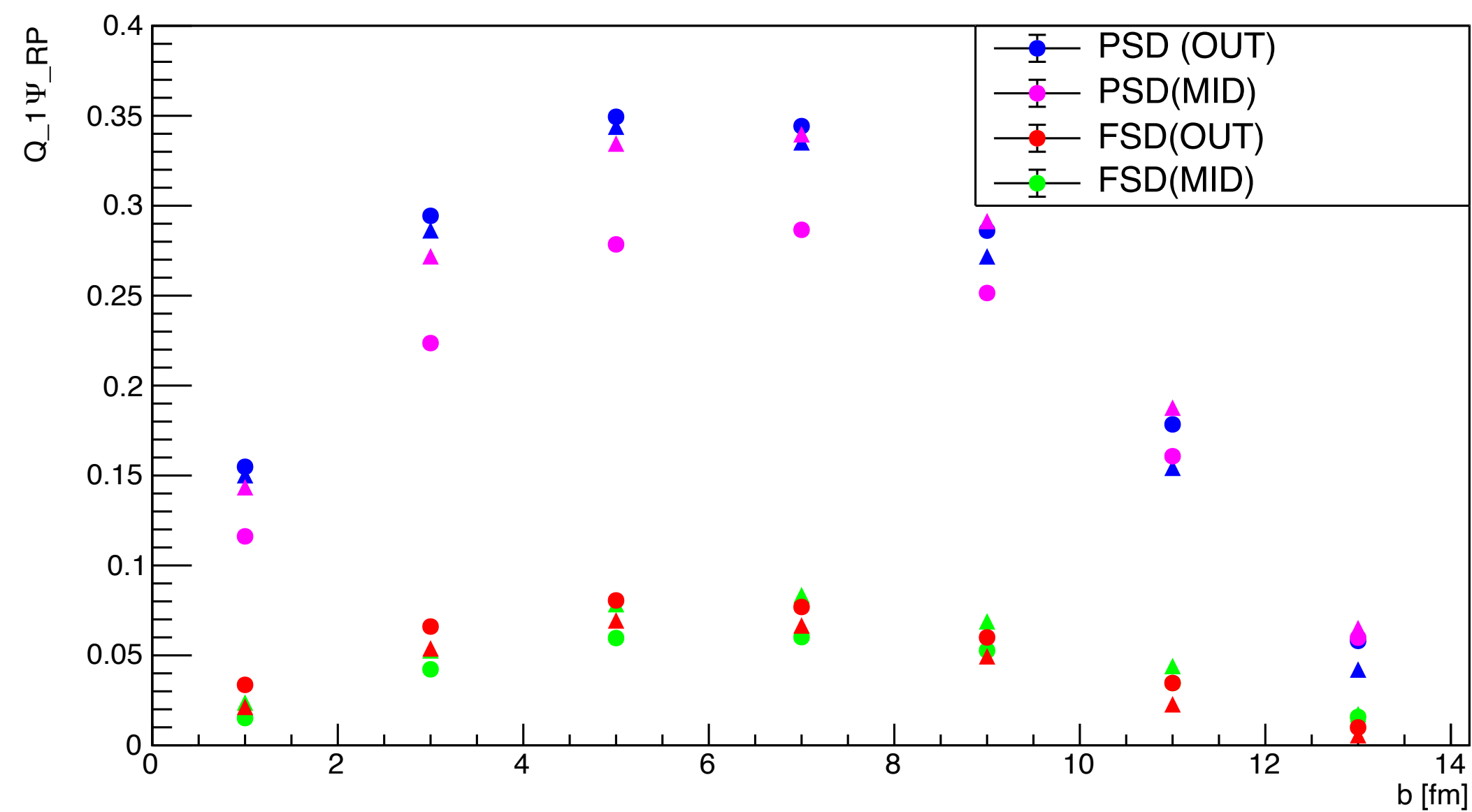
- No beam

- Event based

QN analysis

- FSD 2 cm, granularity 1x1 cm, hole r5 cm

- Cut dE/dx > 3 MeV

- IN = 10-20 cm, MID = 20-40 cm, OUT = 40-80 cm

Comparison with PSD

- Approximately 5 times smaller correlation in FSD

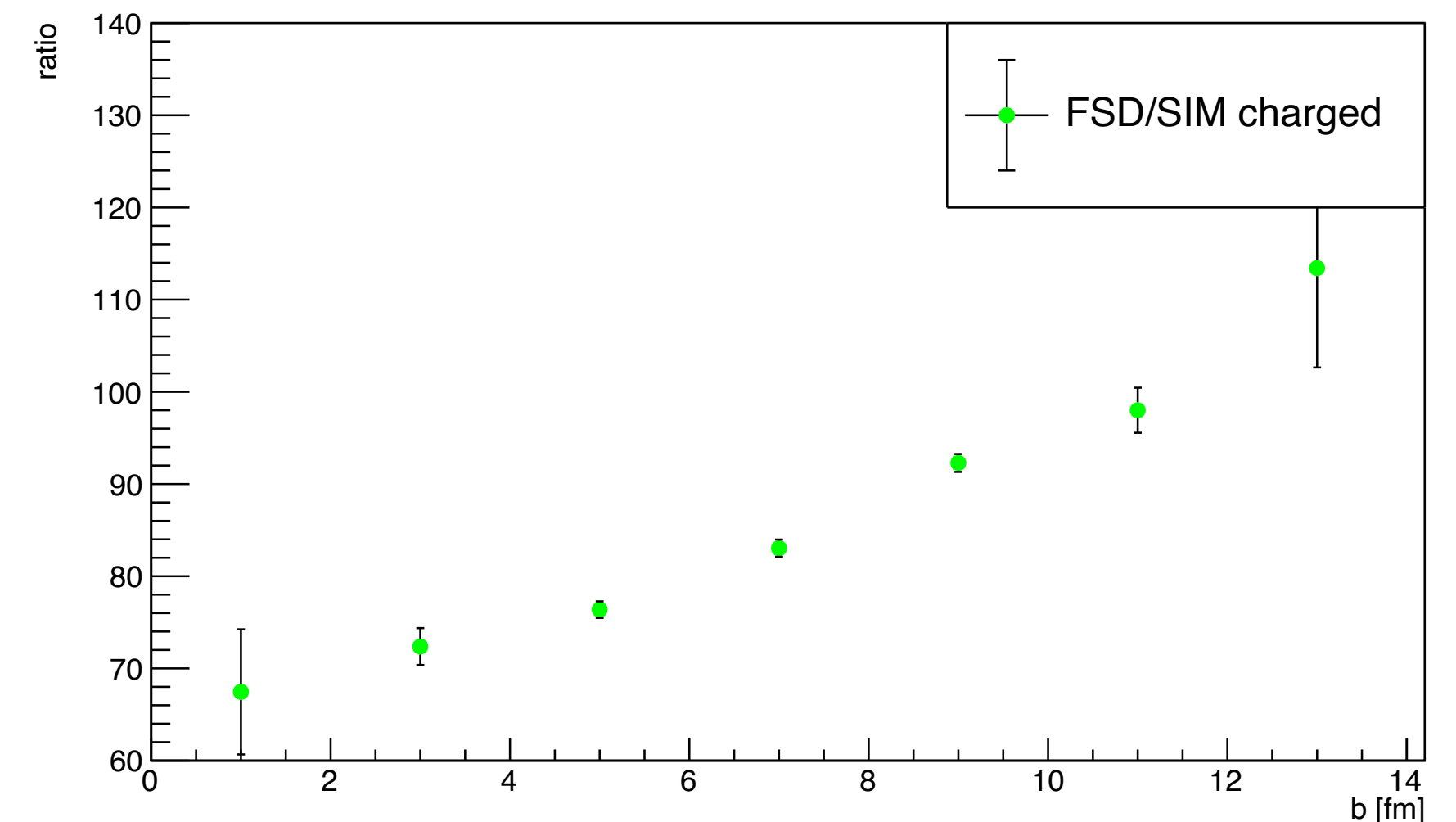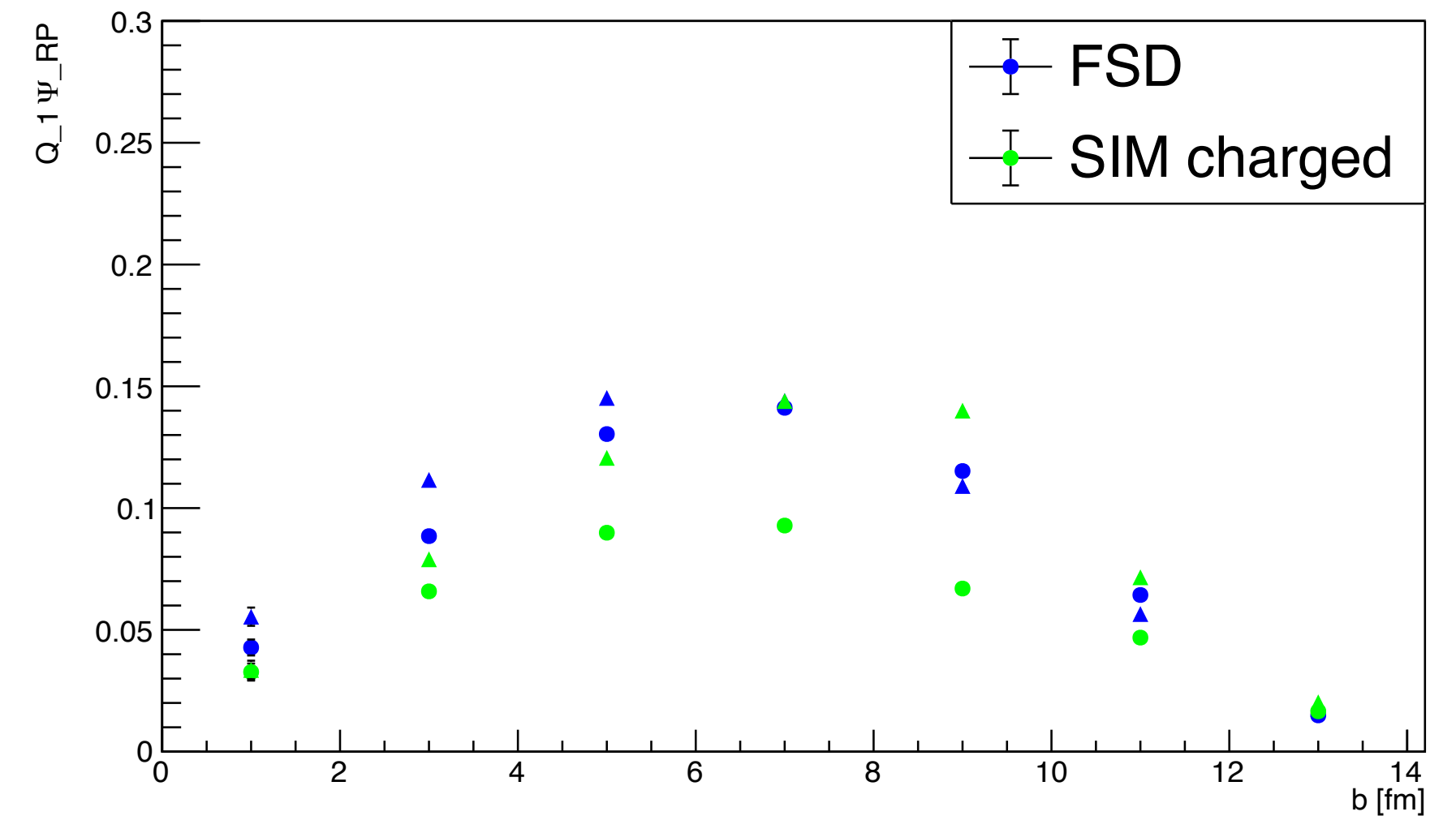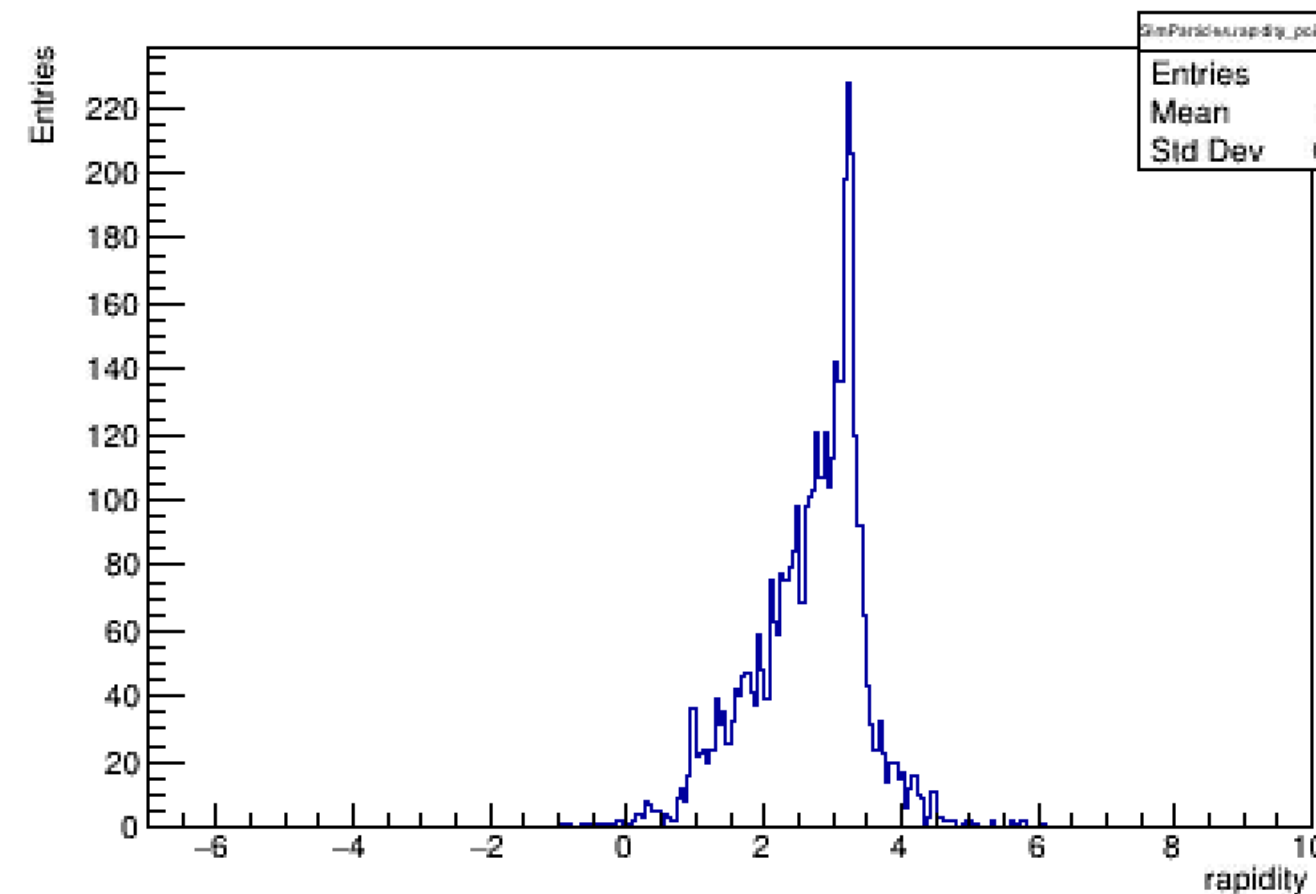# Add info in sim particles

- Now we can select only particles which track has FSD point

- Weight to QN can be Q^2

```
track.SetMomentum(mctrack->GetPx(), mctrack->GetPy(), mctrack->GetPz());
track.SetMass(float(mctrack->GetMass()));
track.SetPid(int(mctrack->GetPdgCode()));
track.SetField(int(mctrack->GetGeantProcessId()), igeant_id_);
track.SetField(int(mctrack->GetNPoints(ECbmModuleId::kMvd)), in_hits_);
track.SetField(int(mctrack->GetNPoints(ECbmModuleId::kSts)), in_hits_ + 1);
track.SetField(int(mctrack->GetNPoints(ECbmModuleId::kTrd)), in_hits_ + 2);
track.SetField(int(mctrack->GetUniqueID()), icbm_id_);
track.SetField(float(mctrack->GetCharge()*mctrack->GetCharge()), icharge2_);
track.SetField(int(mctrack->GetNPoints(ECbmModuleId::kFsd)), in_points_fsd_);
```
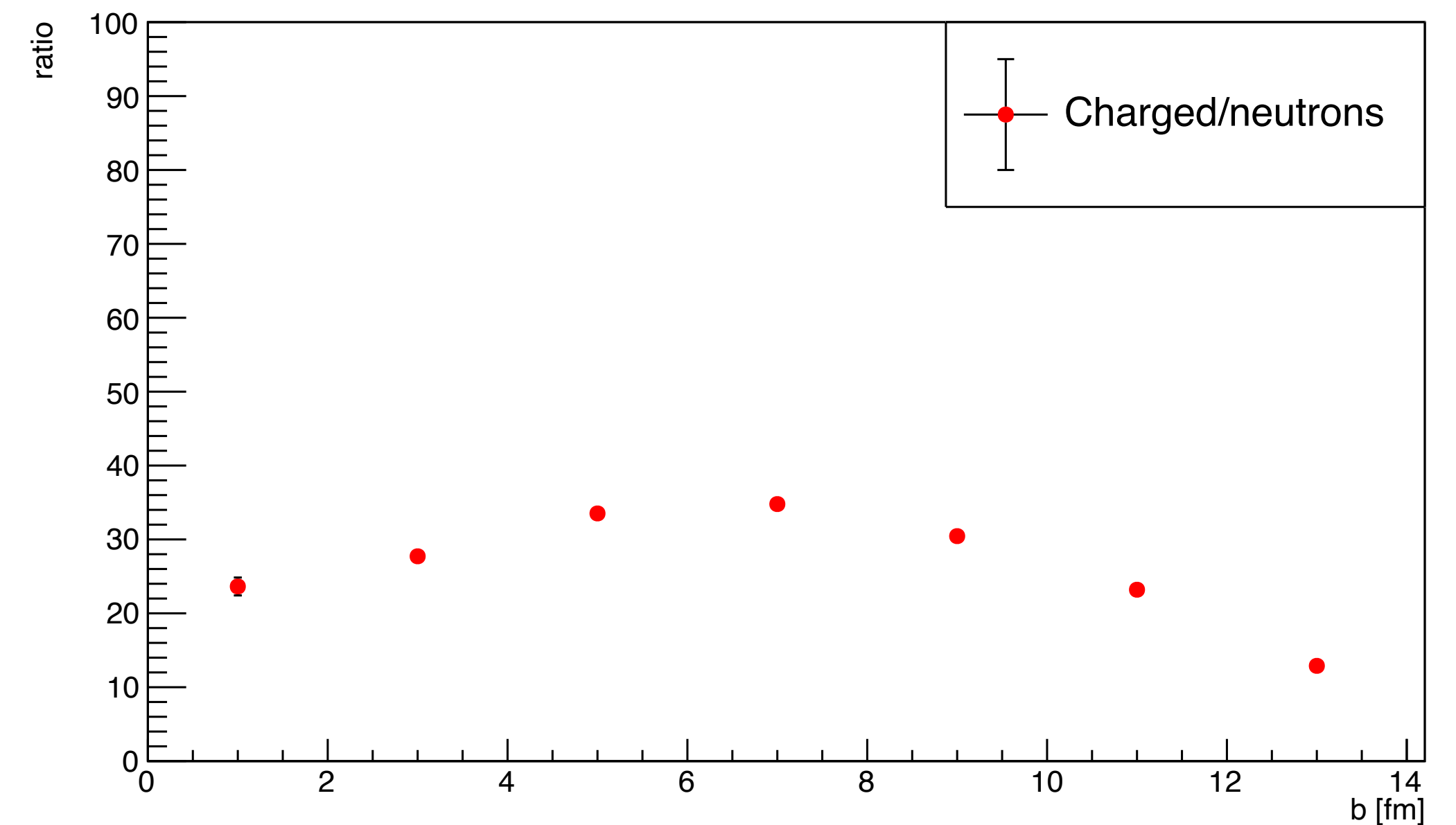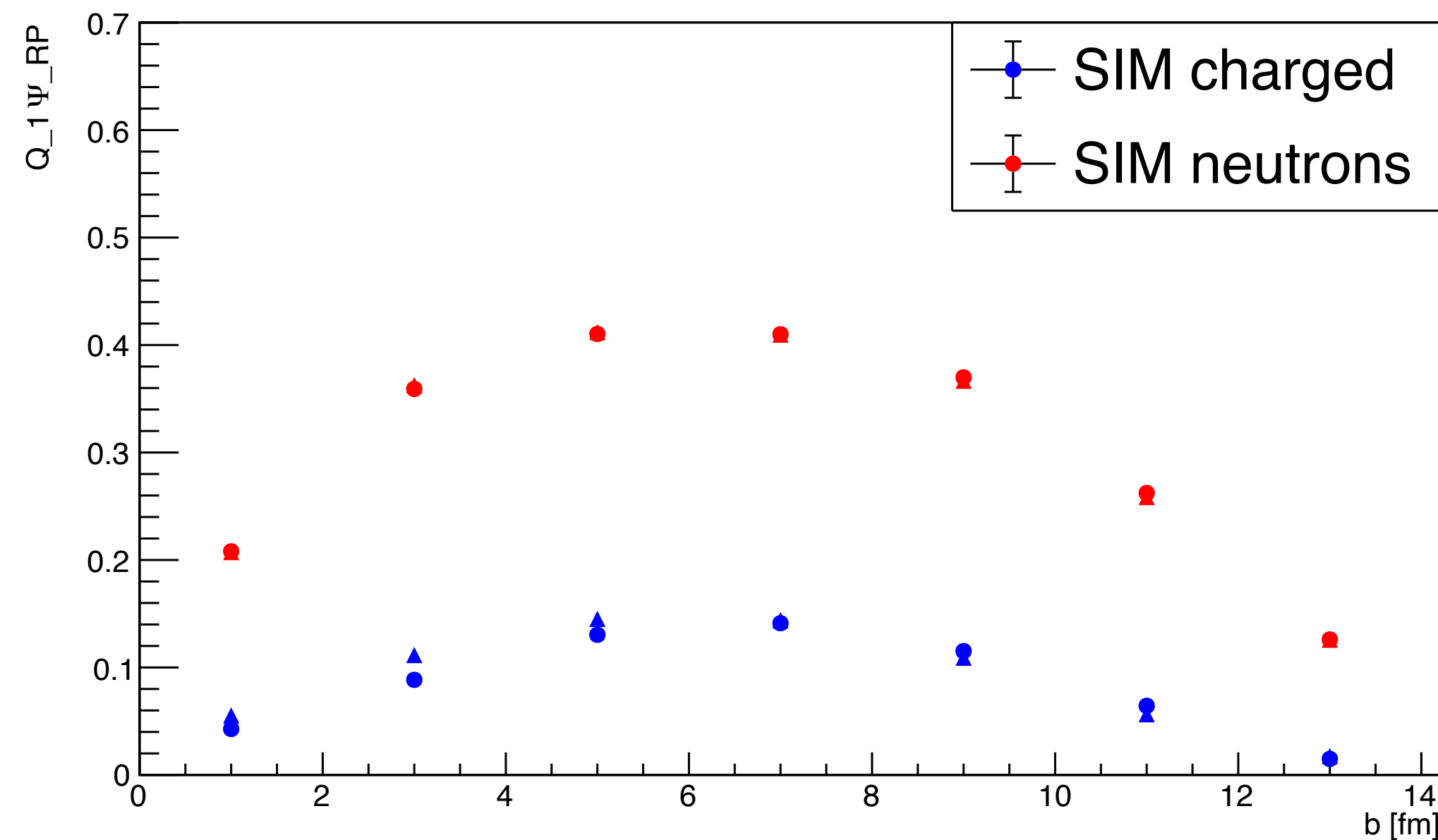
Simulated particles

- P > 1 GeV

- Number of FSD points per MC track = 1

- Weight of the sim particles = charge2
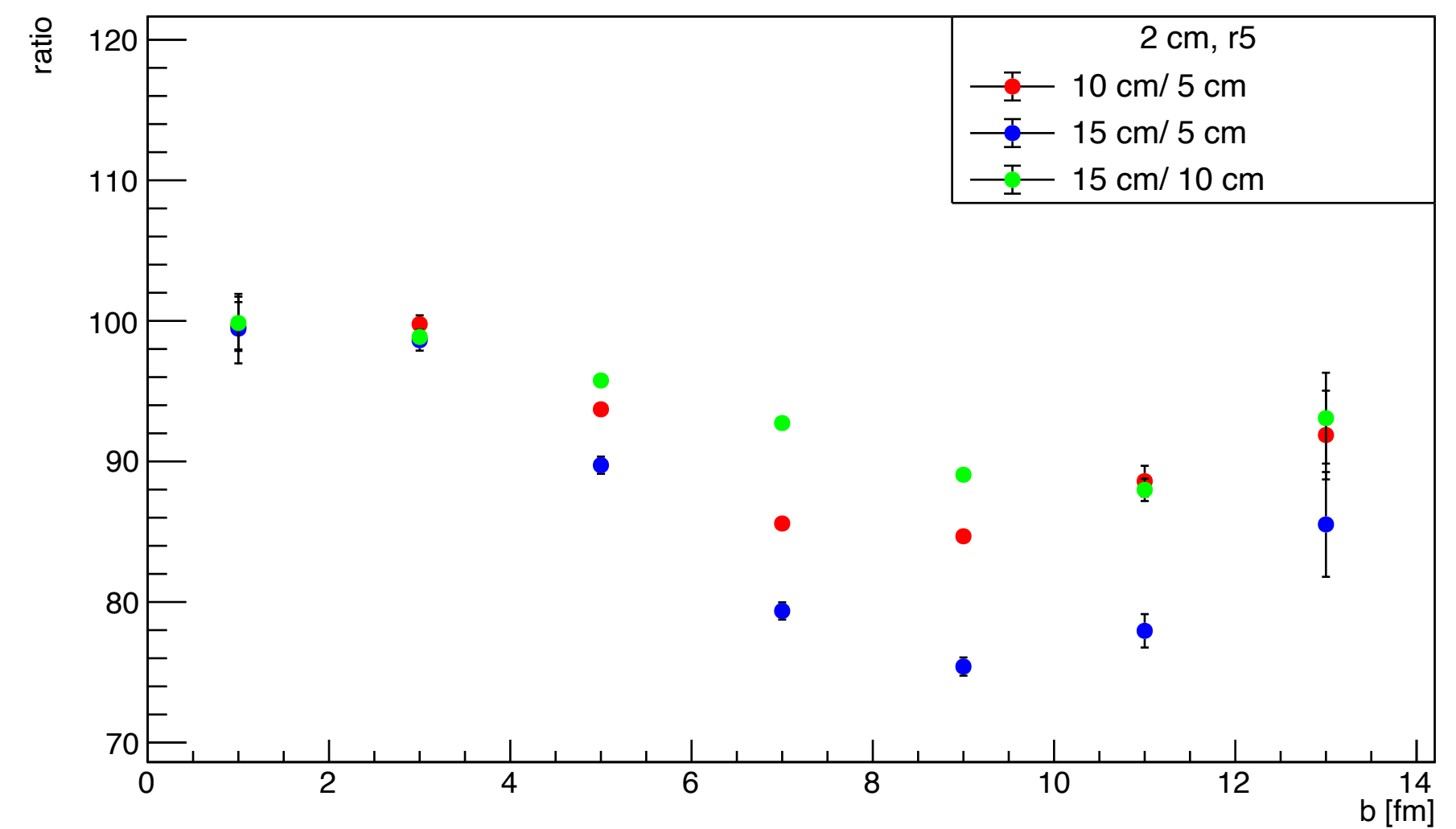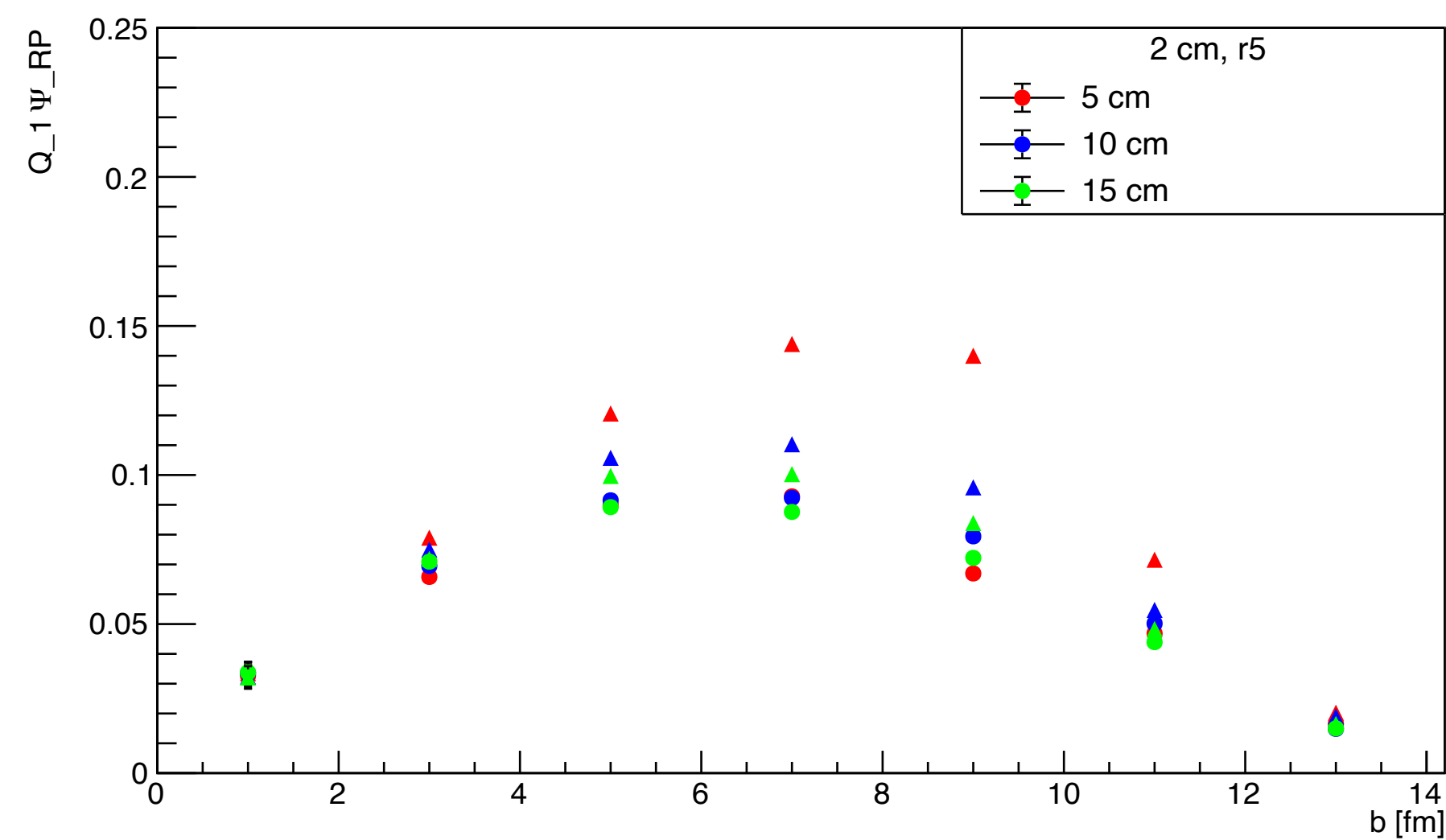
- FSD see almost maximum of what it can see

Charged particles vs neutrons

- Neutrons in rapidity 2.2-3.6 (QN weights of neutrons = ones)

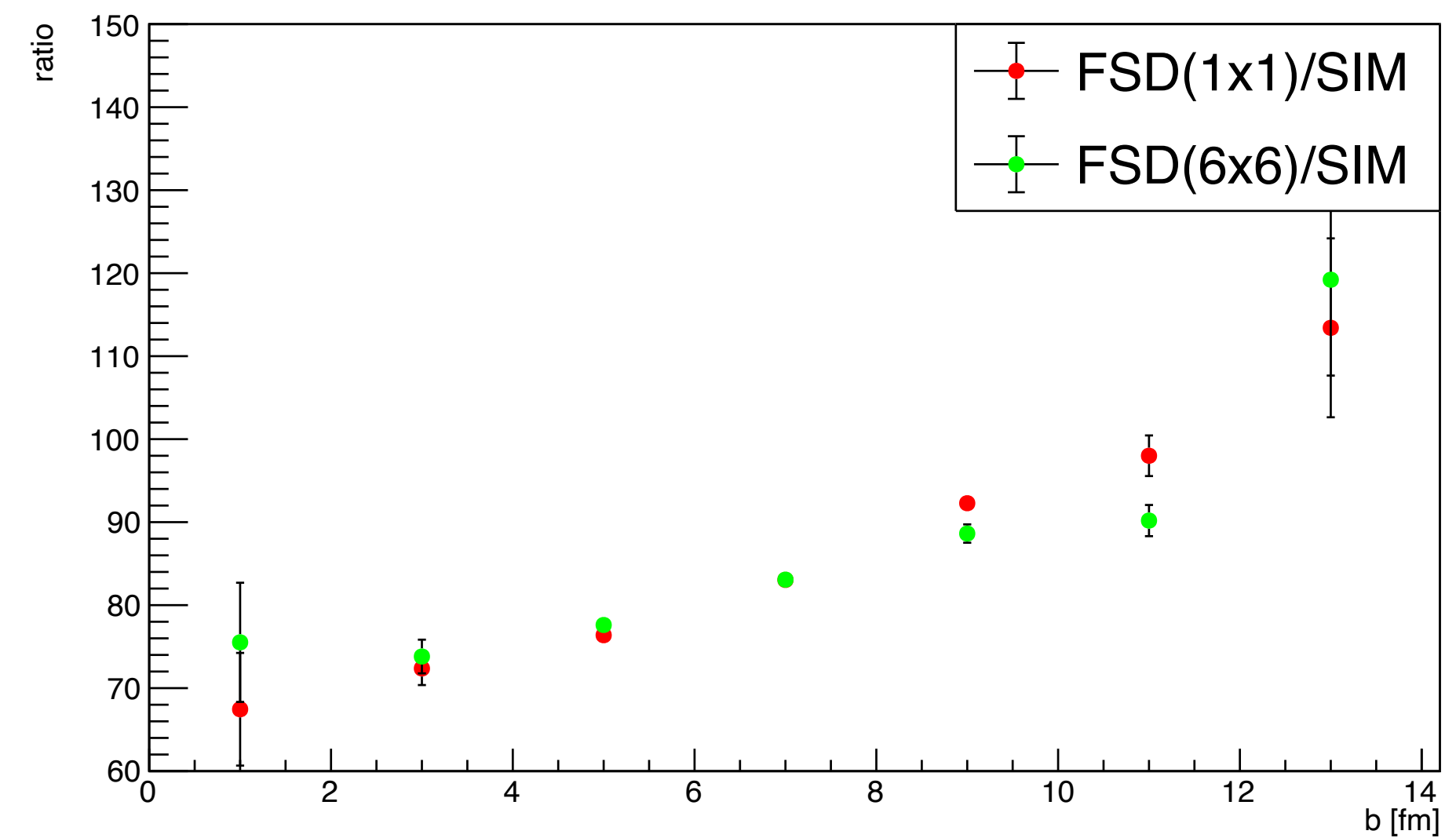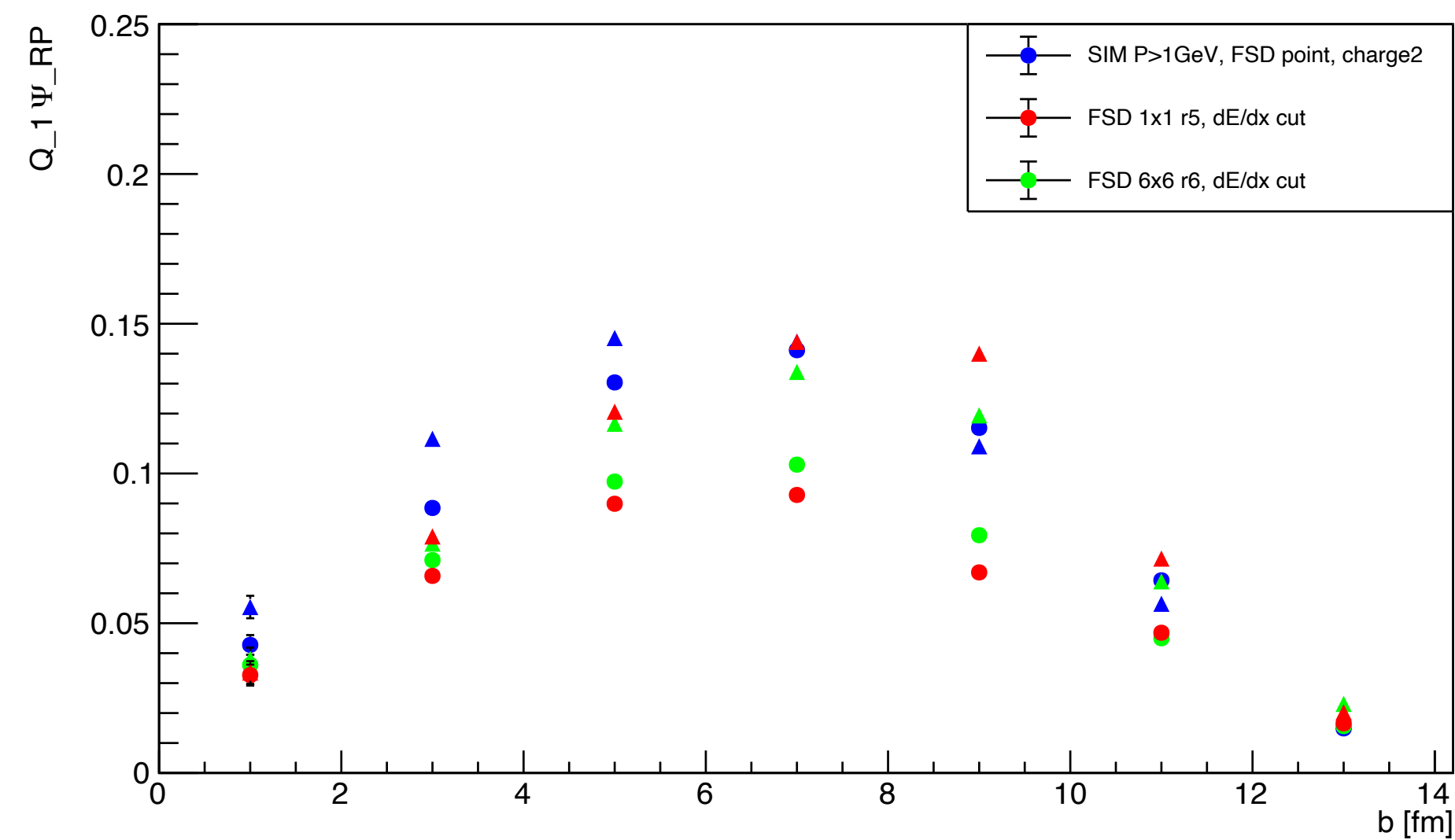- Most of the information is carried by neutrons

Diffrent hole sizes

- Biggest difference hole r = 5 cm -> r =10 cm
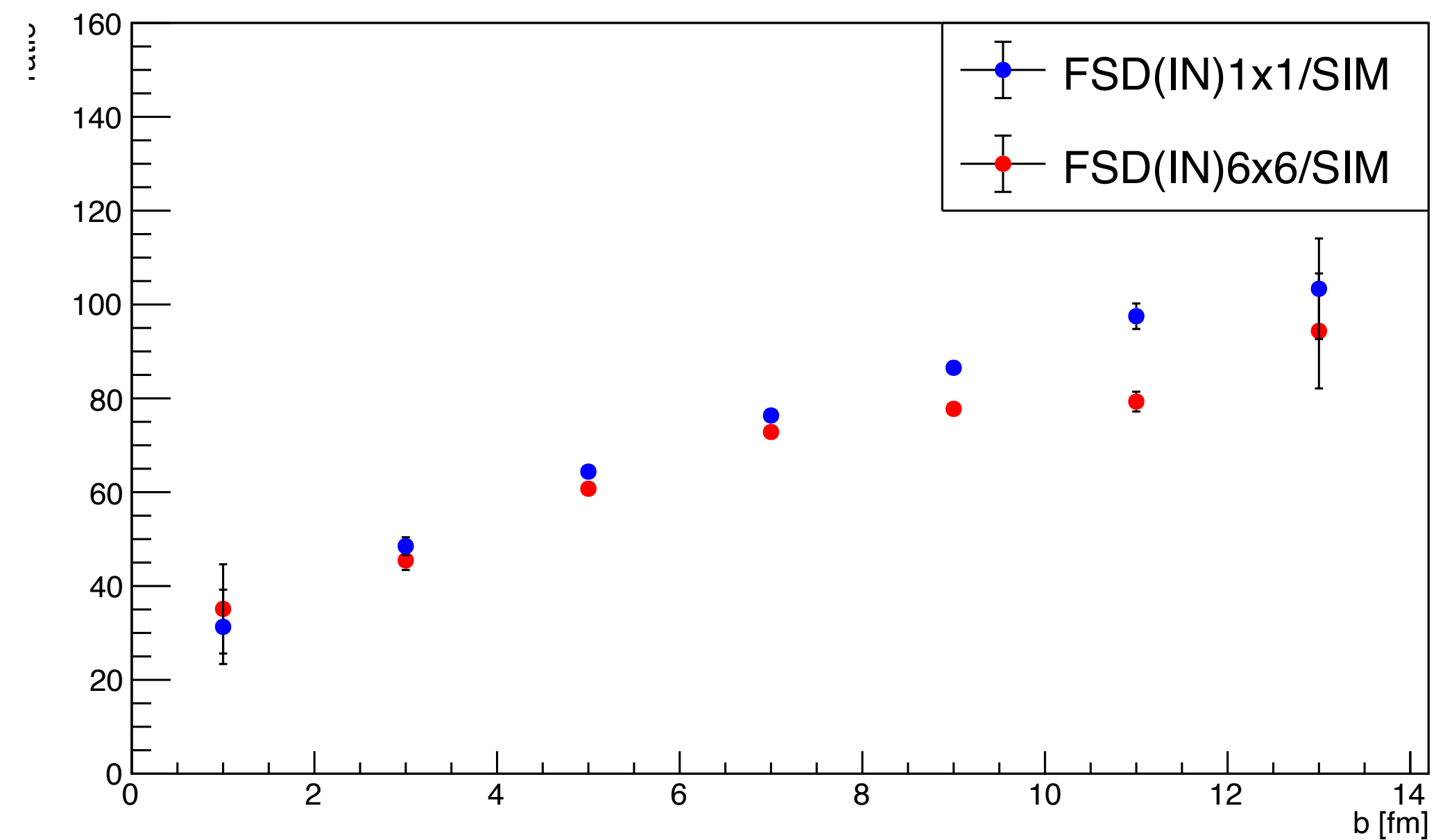
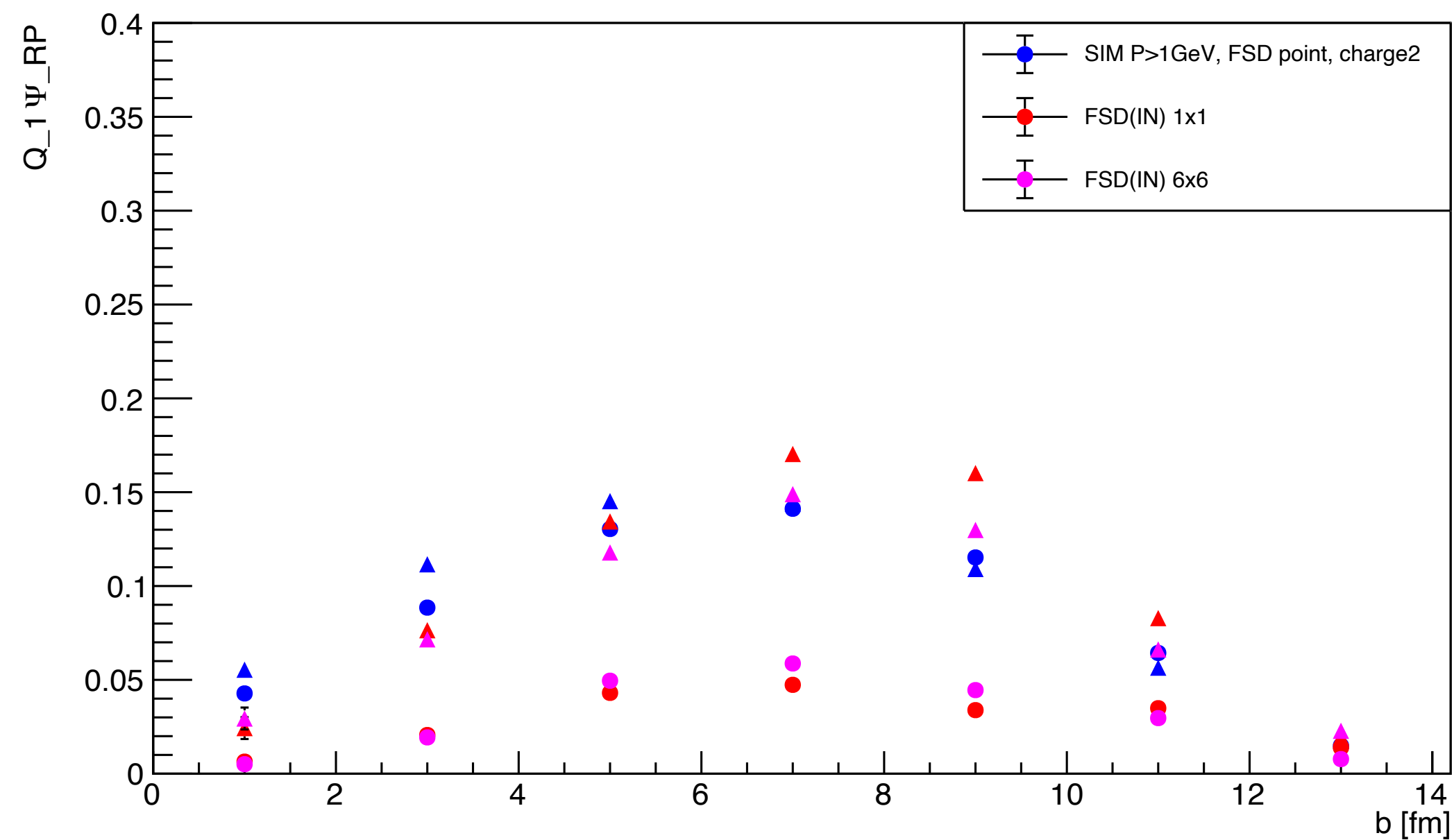- 10% difference r = 10 cm -> r = 15 cm

Granularity

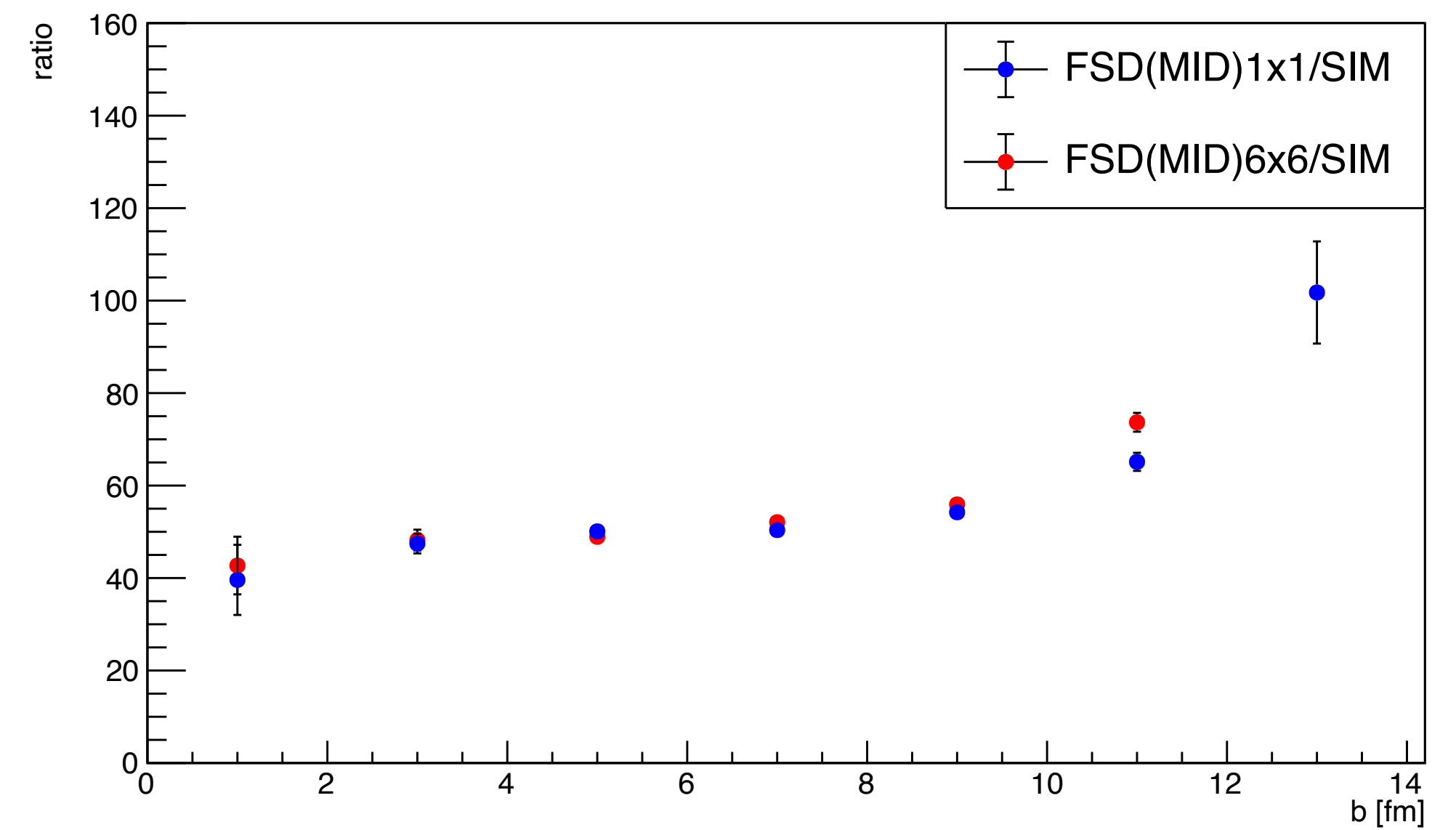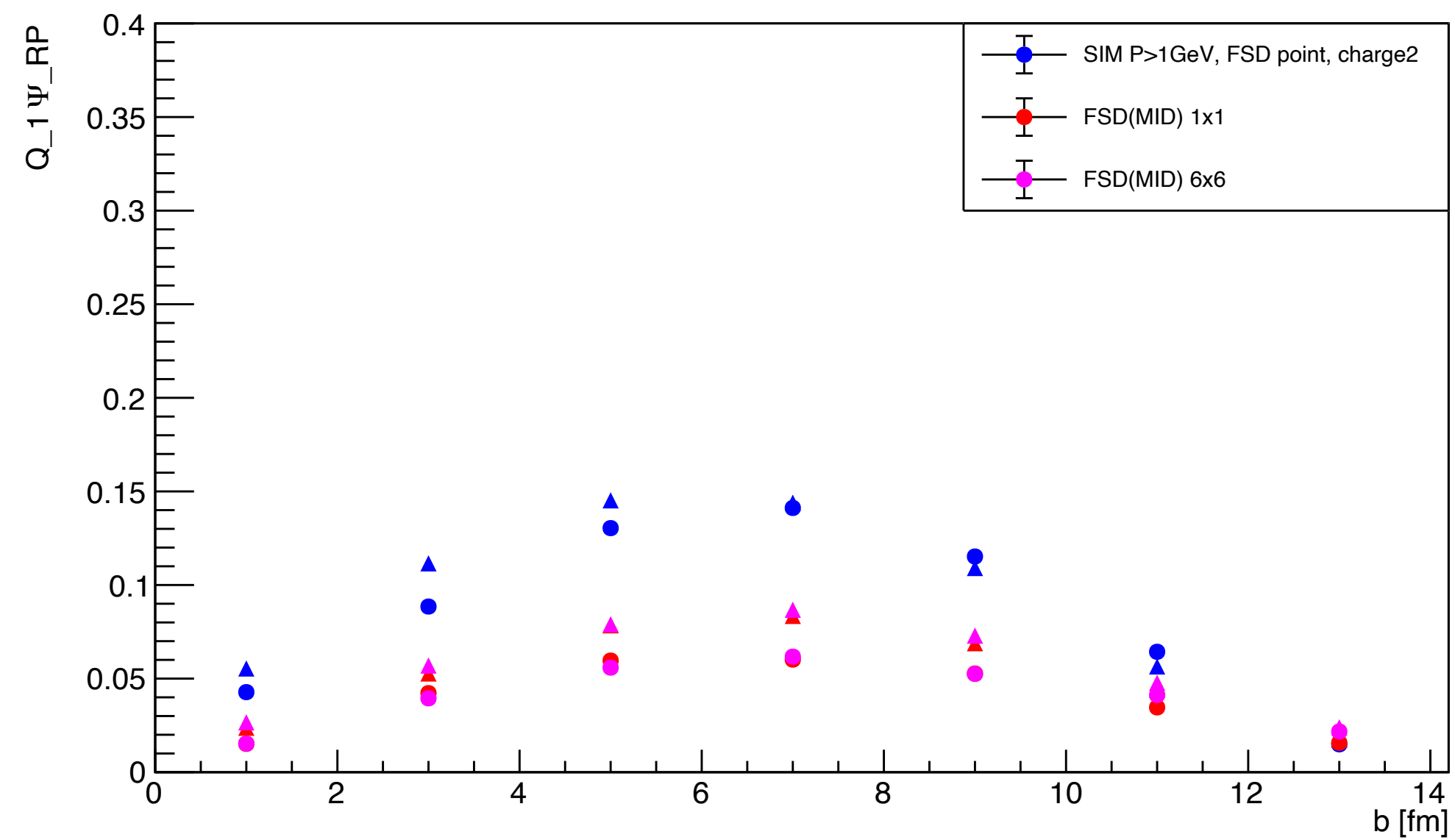- NO significant difference between granularity 1x1 cm vs 6x6 cm

1x1cm (r5) vs 6x6 (r6) - IN

- Compared to resolution from SIM particles (P>1GeV, point in FSD)

- No difference between different granularities in IN part

1x1cm (r5) vs 6x6 (r6) - MID

Radim Dvořák

QN

1x1cm (r5) vs 6x6 (r6) - OUT