

New magnetic field map

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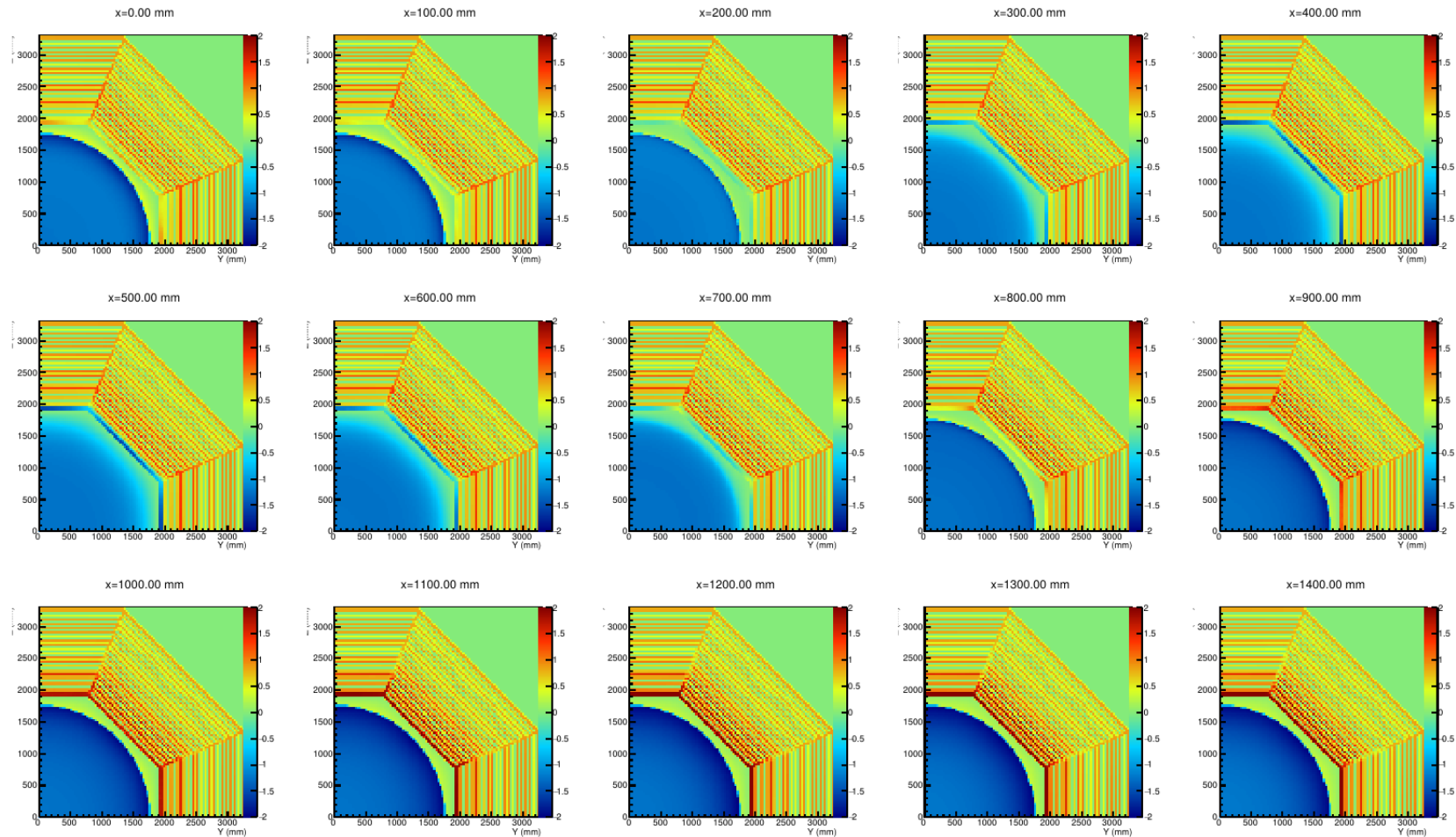
SPD (Bi-)Weekly Meeting
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Note on coordinate systems

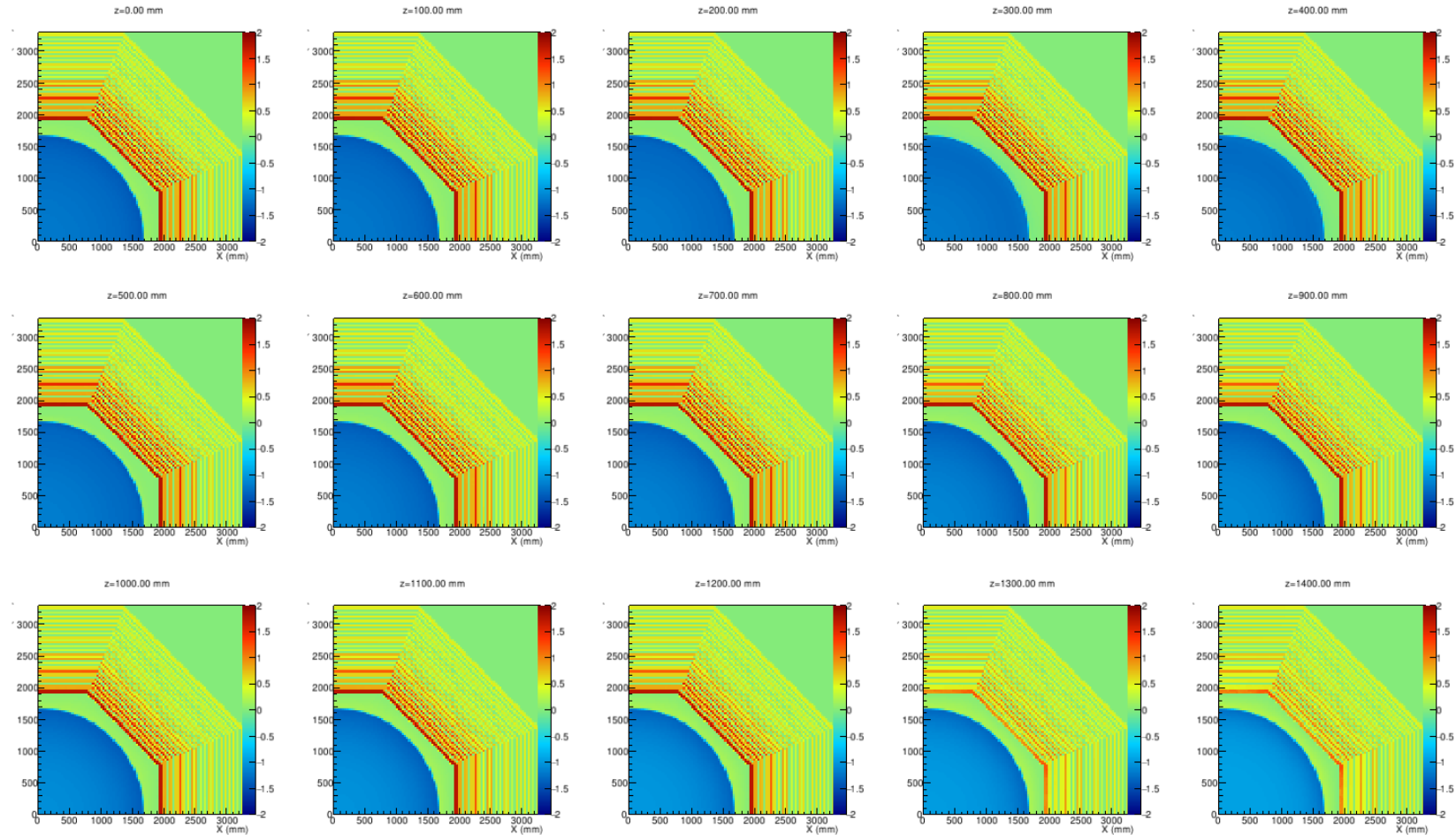
- Here the comparison of two field maps by I. Moskovsky (JINR option?) and Novosibirsk group is given.
- The field map prepared by I. Moshkovsky uses coordinates where X-axis is along the beam direction,
- The field map from the Novosibirsk group uses the SPD coordinate system (Z-axis along beams)

$B_x(B_z)$

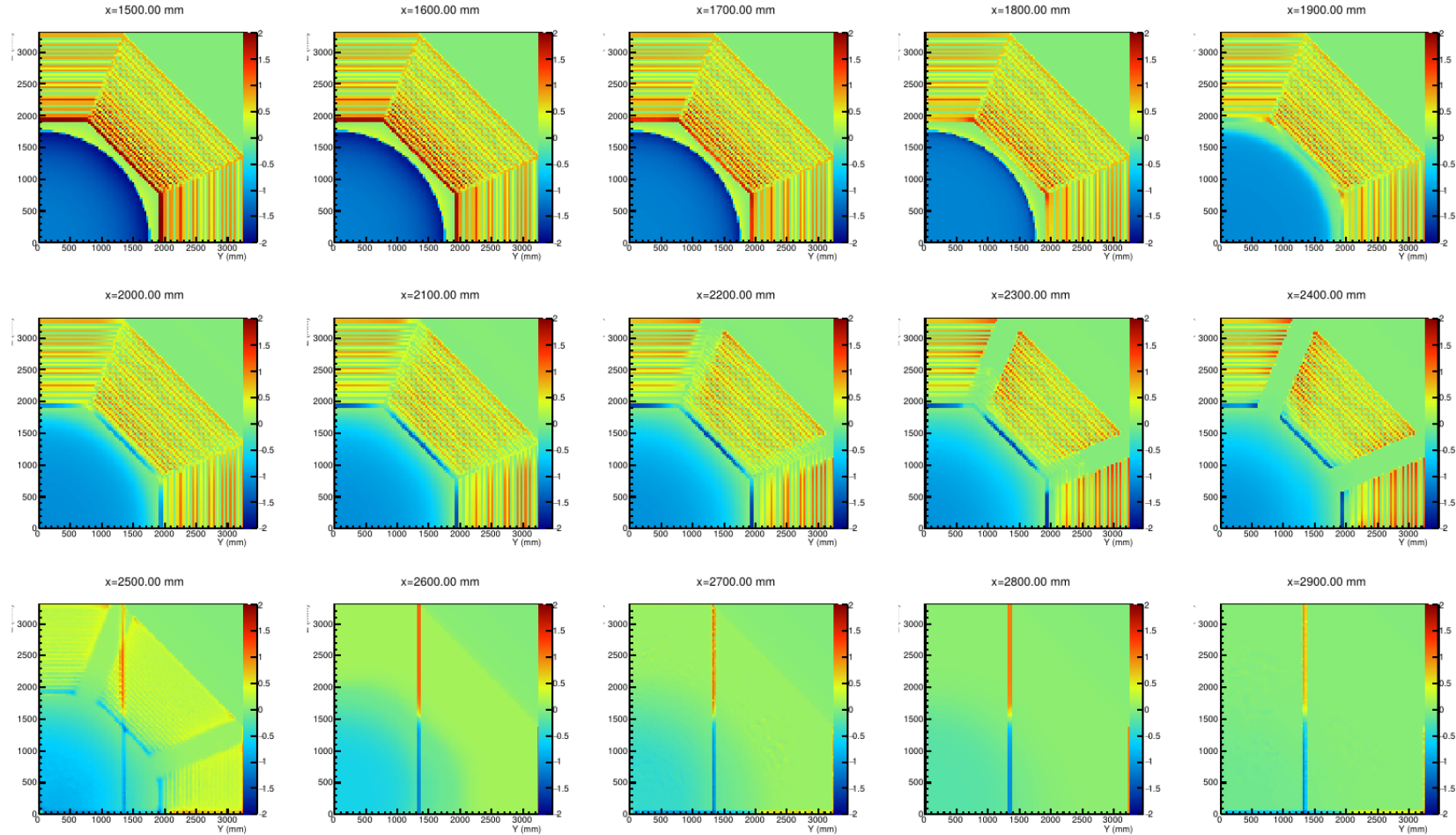
B_x ($0\text{mm} < x < 1400\text{mm}$) [I. Moshkovky]



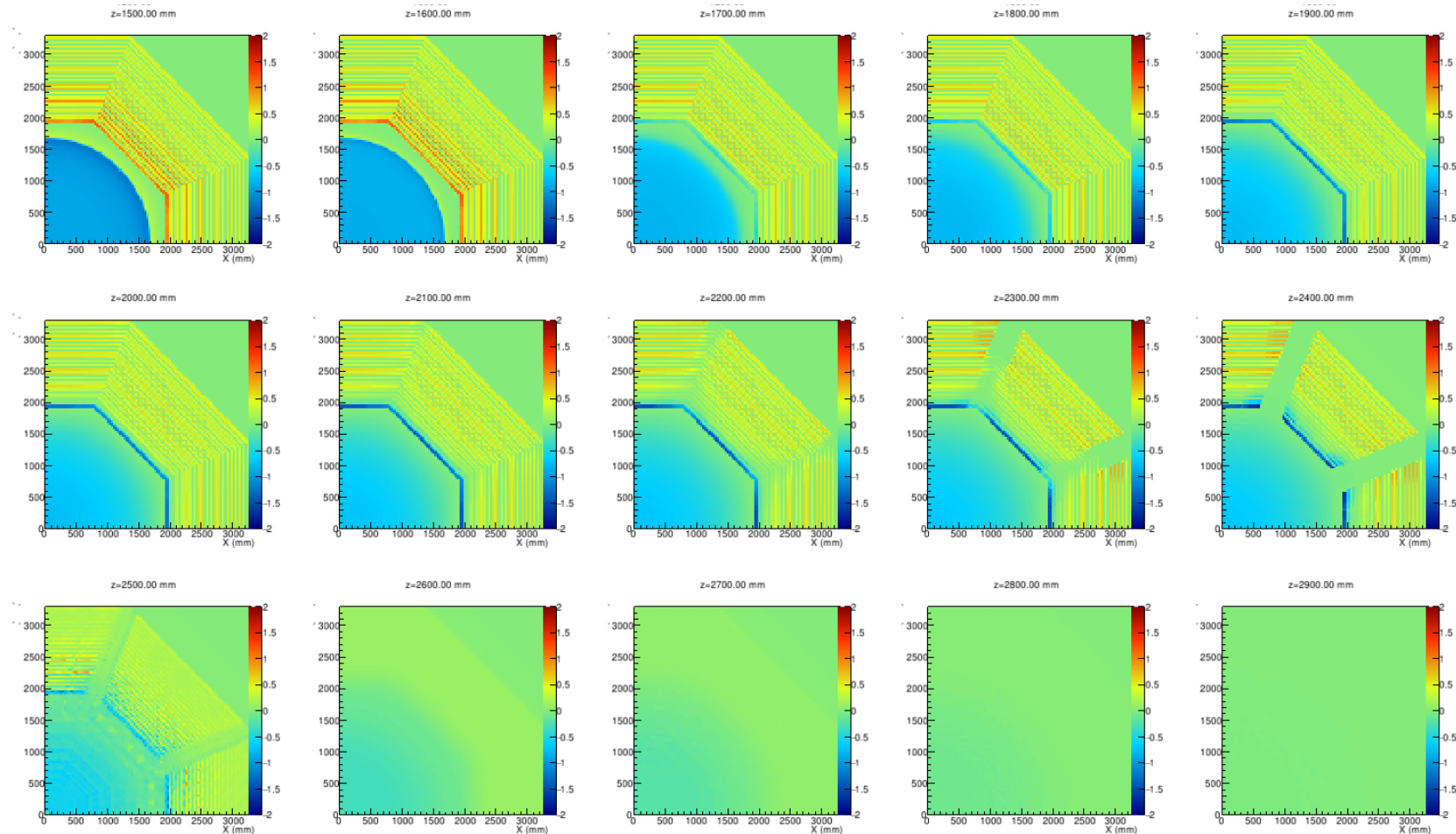
B_z ($0\text{mm} < z < 1400\text{mm}$) [Novosibirsk group]



B_x (1500mm < x < 2900mm) [I. Moshkovky]

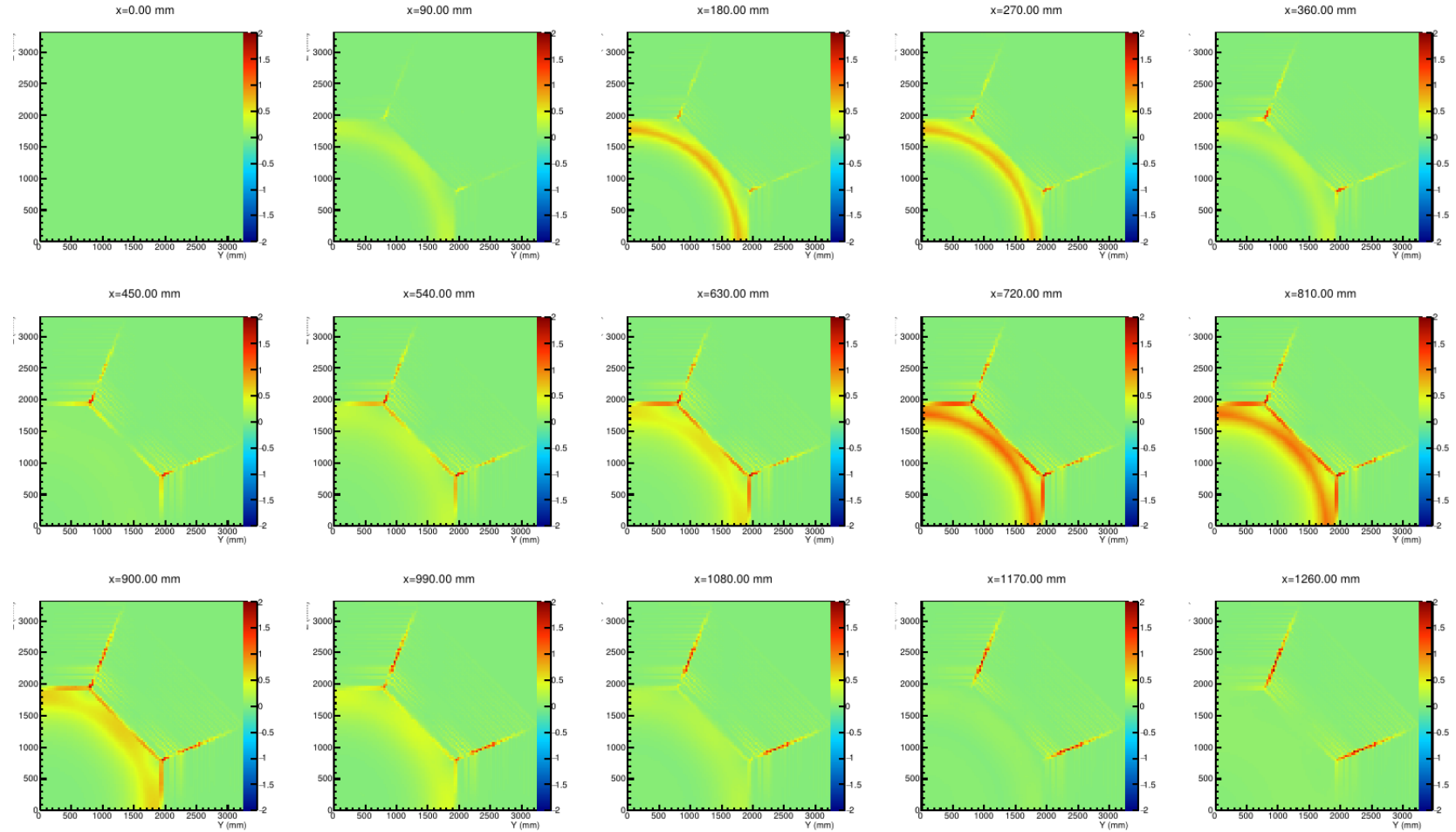


B_z (1500mm < z < 2900mm) [Novosibirsk group]

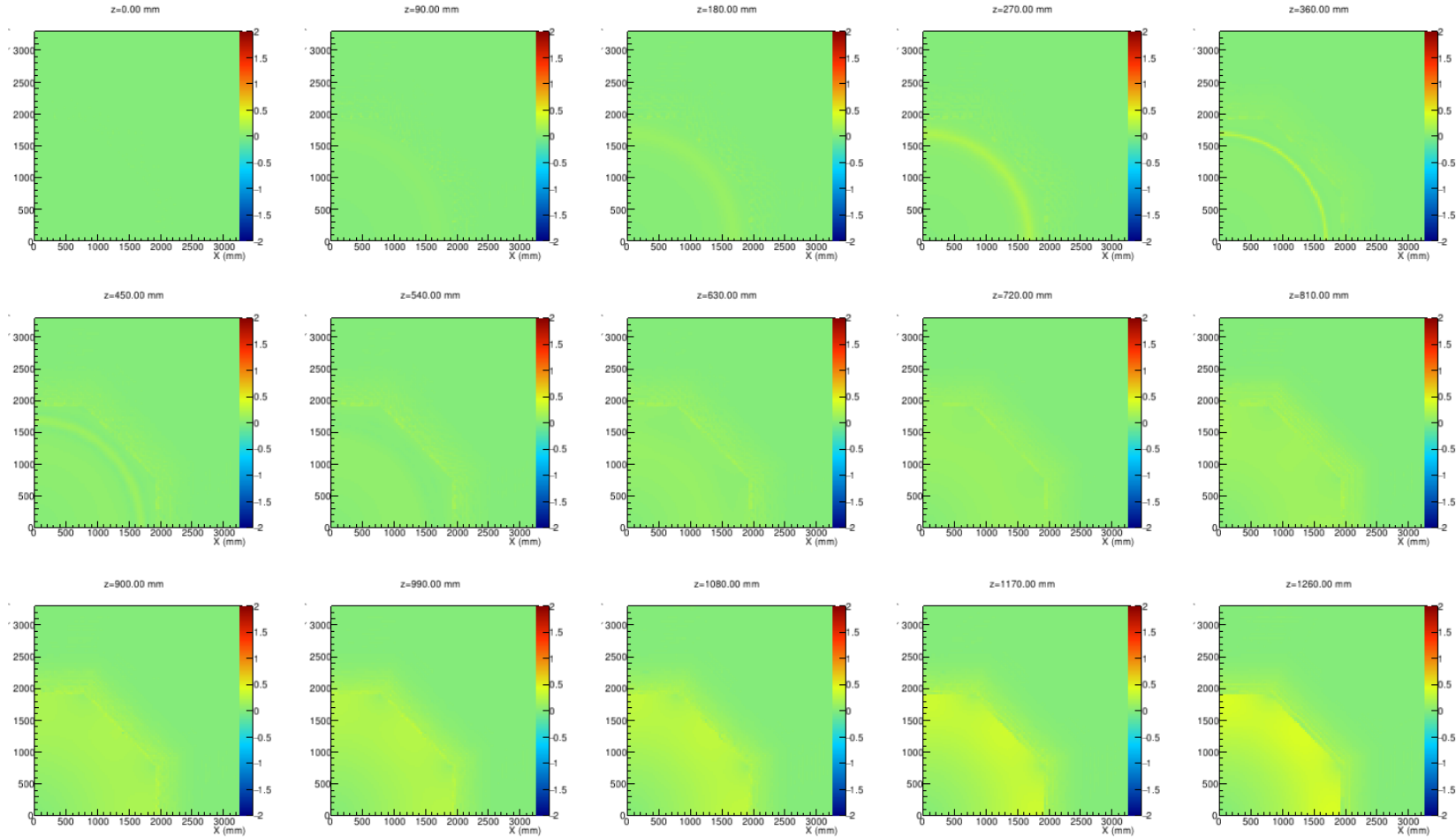


B_r

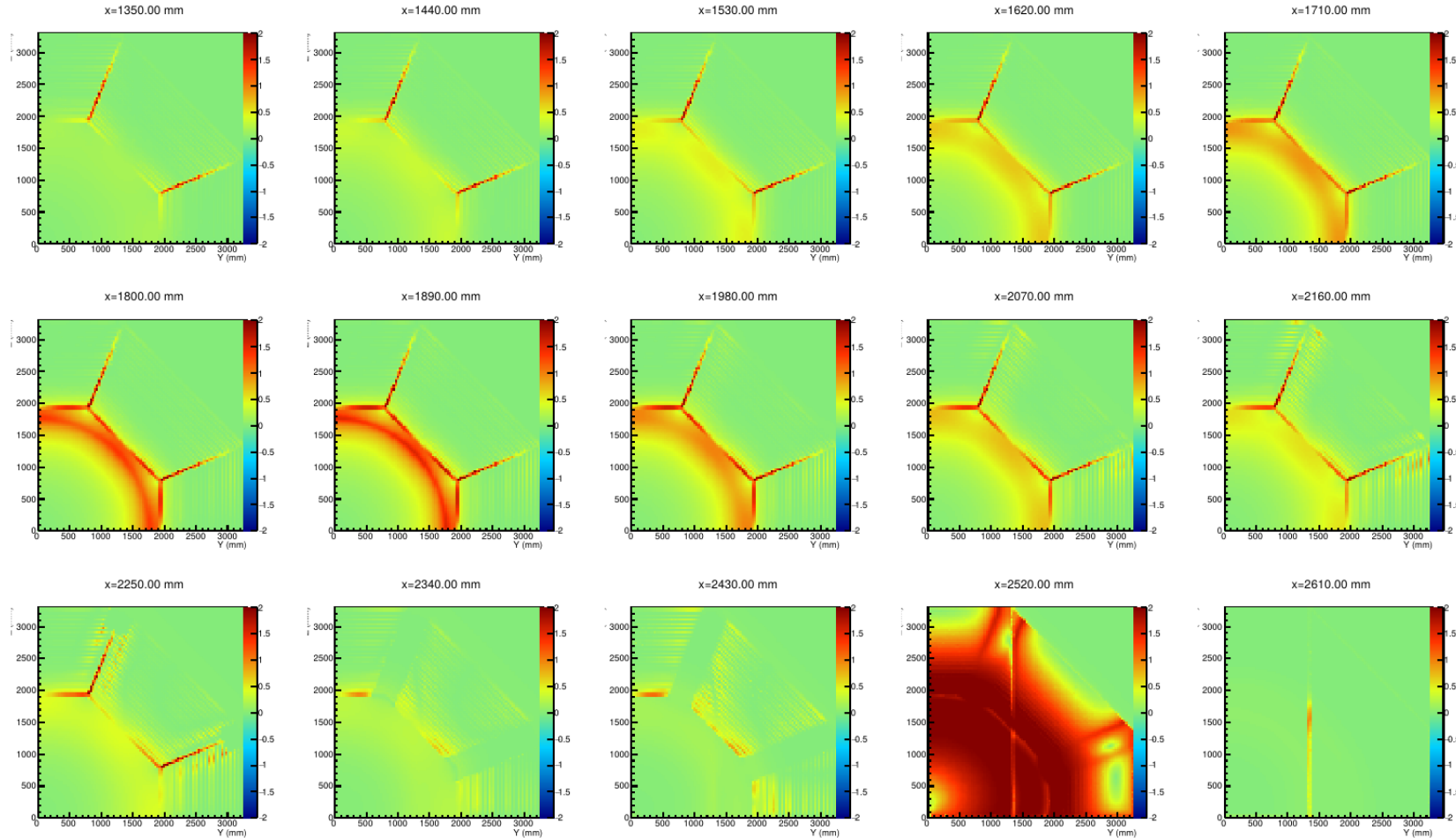
B_r ($0\text{mm} < x < 1400\text{mm}$) [I. Moshkovky]



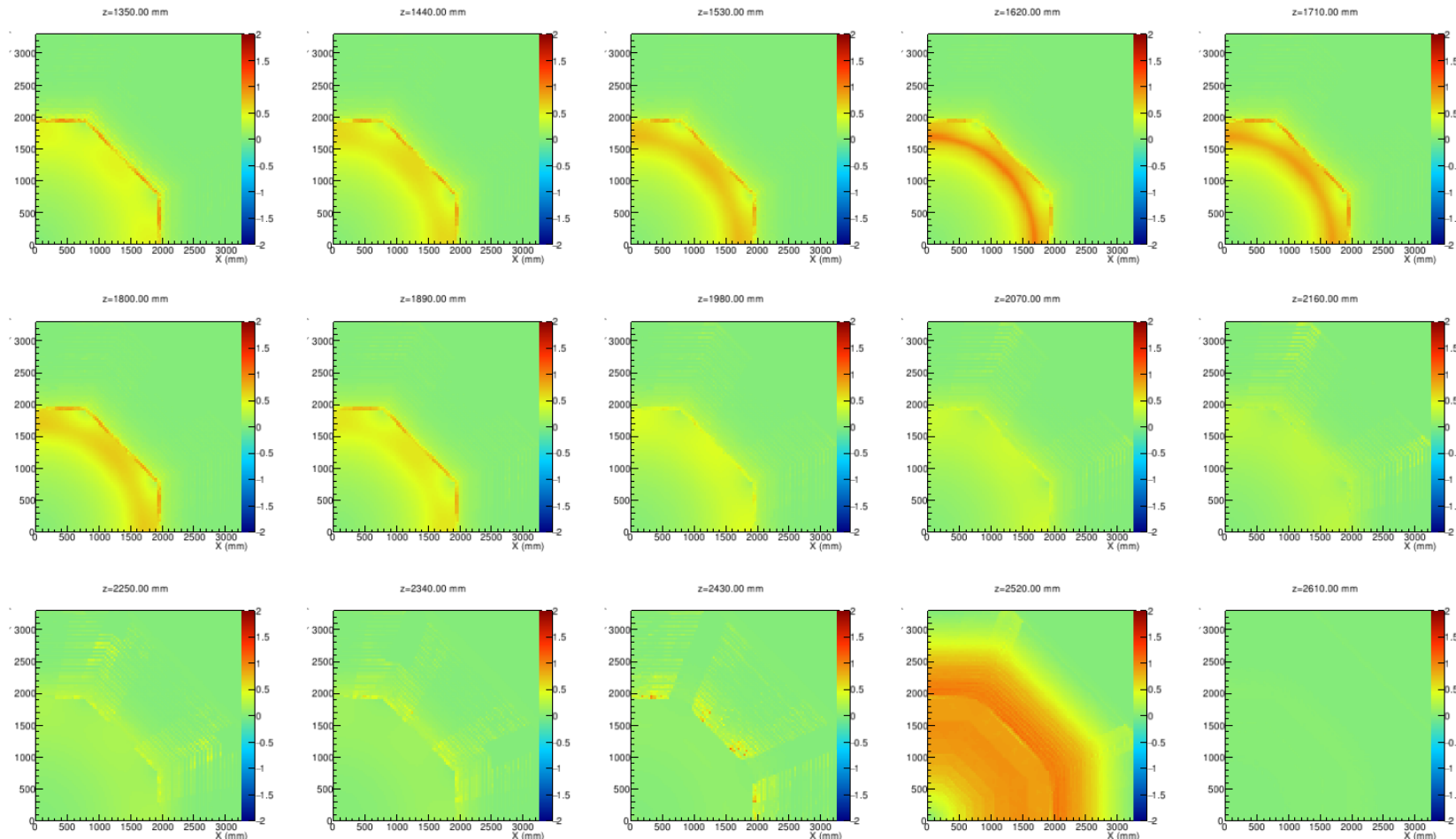
B_r (0mm < z < 1400mm) [Novosibirsk group]



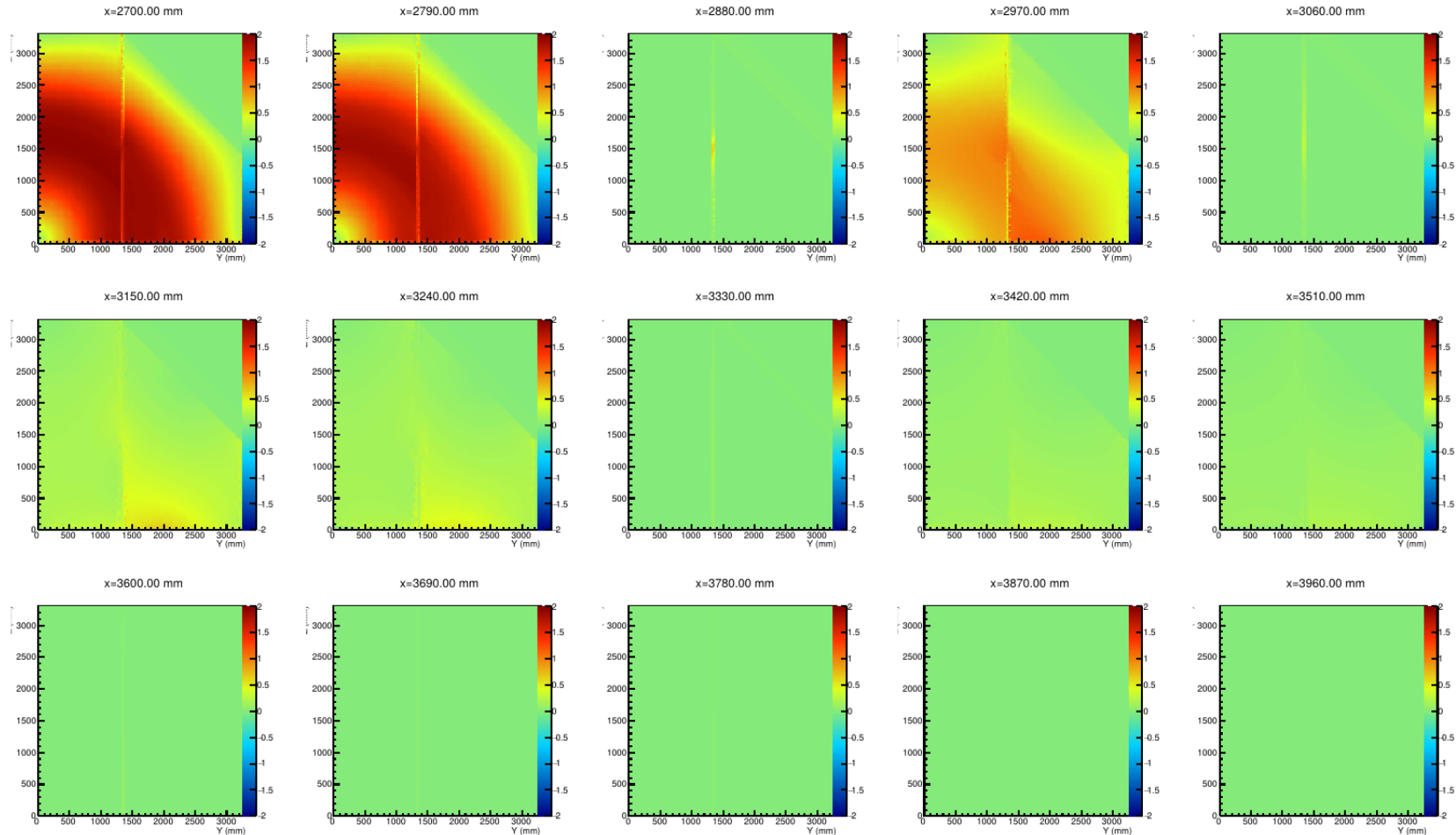
B_r (1500mm < x < 2900mm) [I. Moshkovky]



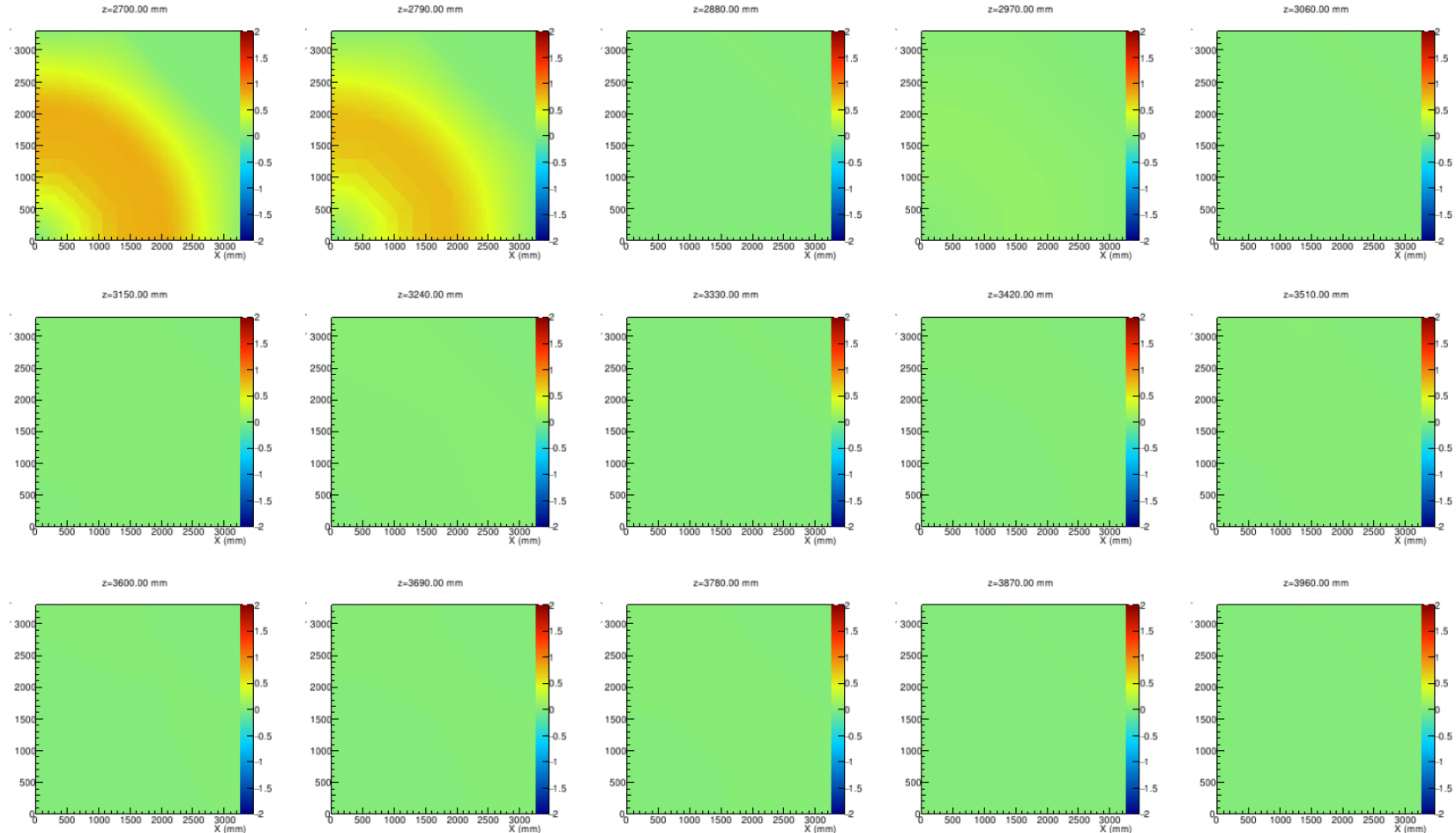
B_r (1500mm < z < 2900mm) [Novosibirsk group]



B_r (3000mm < x < 4400mm) [I. Moshkovky]

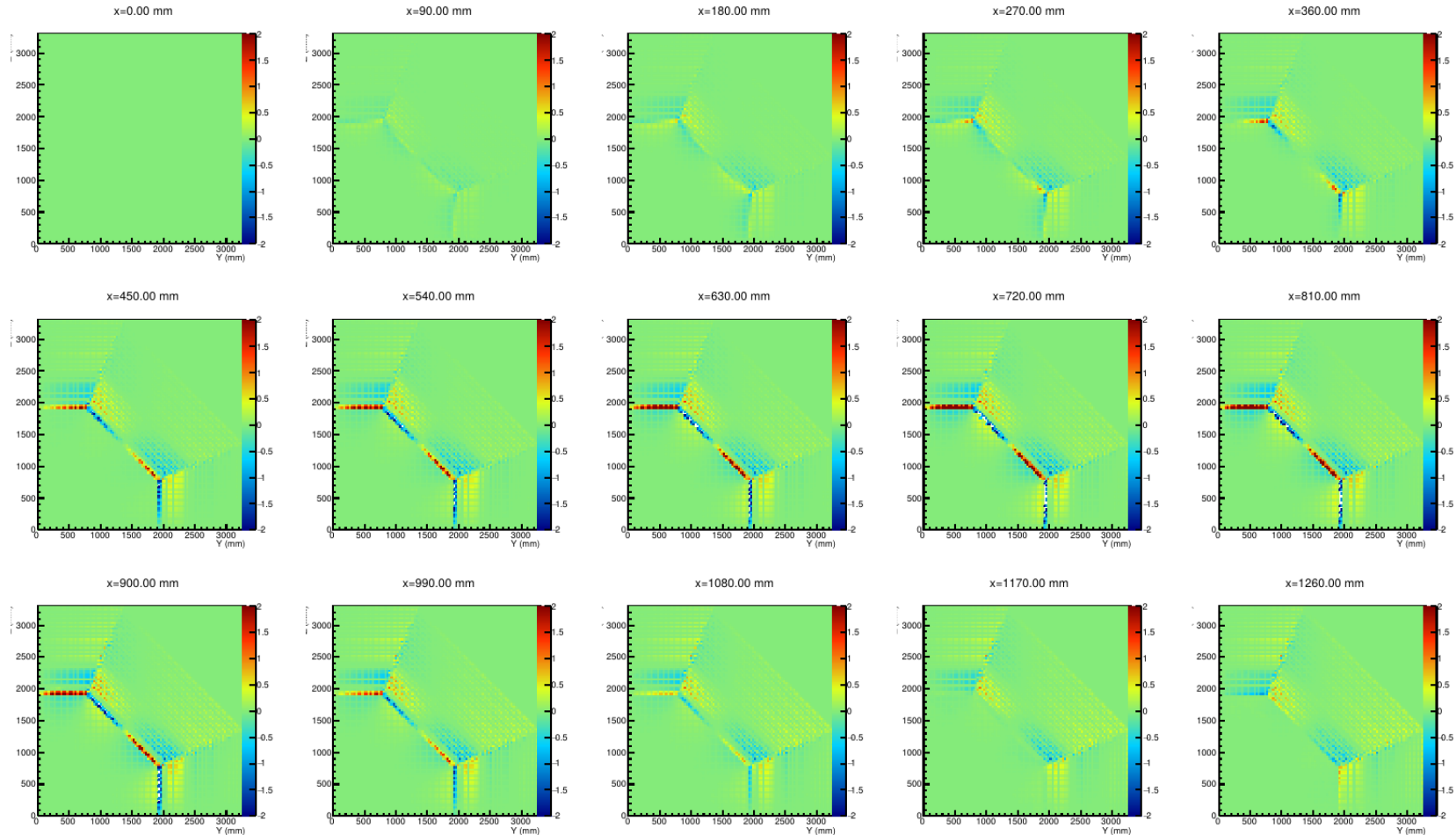


B_r (3000mm < z < 4400mm) [Novosibirsk group]

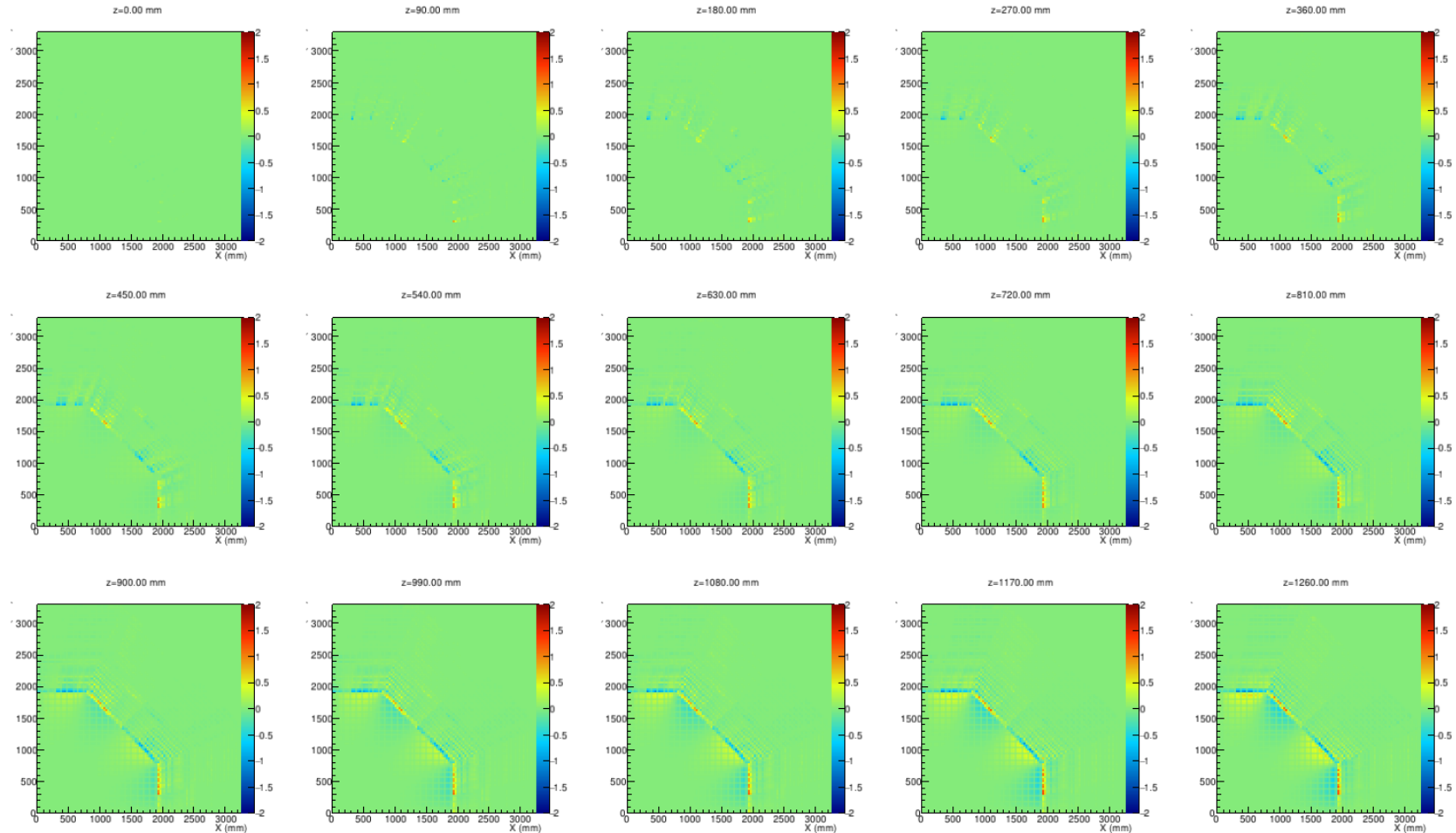


B_{phi}

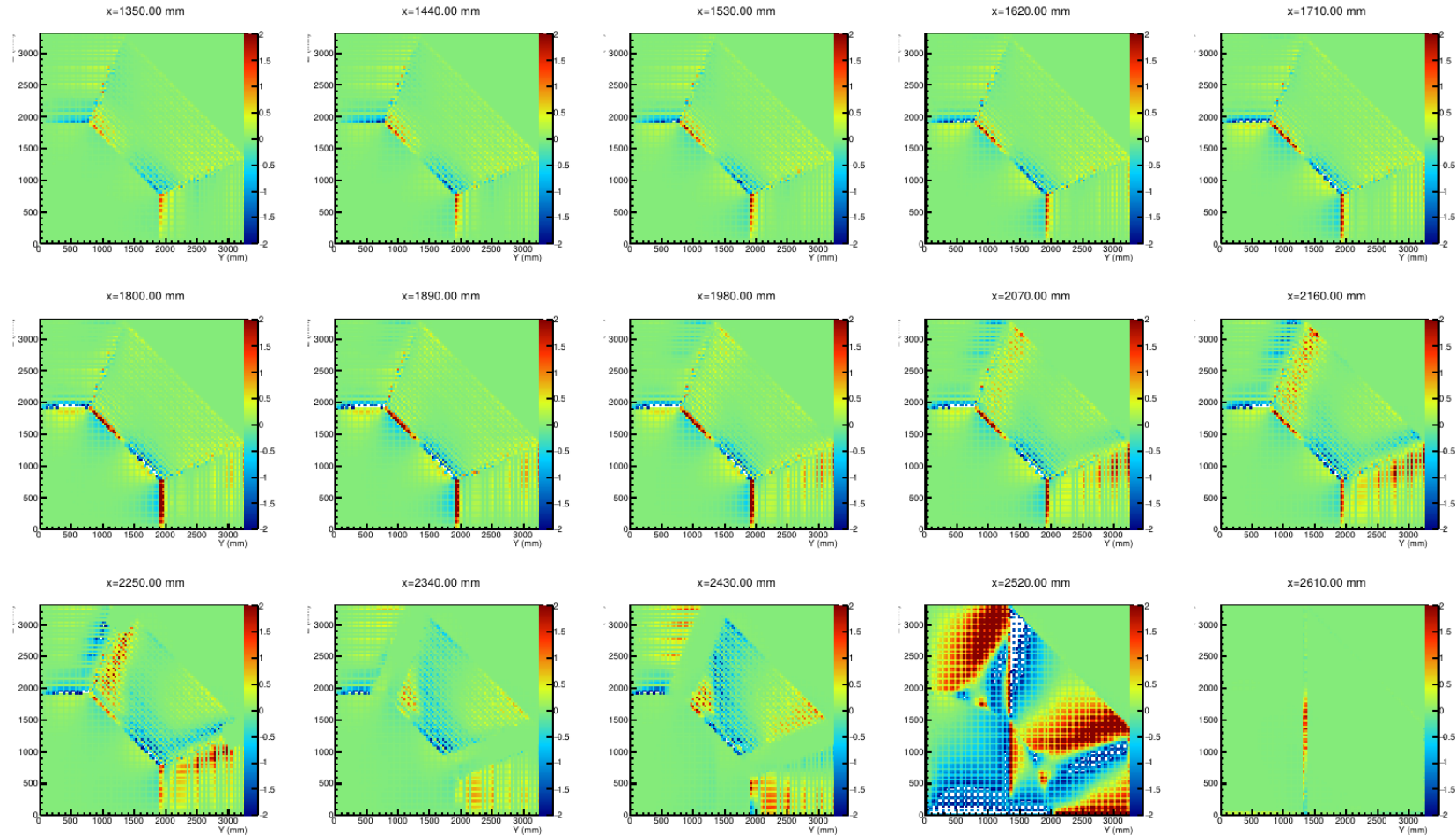
B_{ϕ} (0mm < x < 1400mm) [I. Moshkovky]



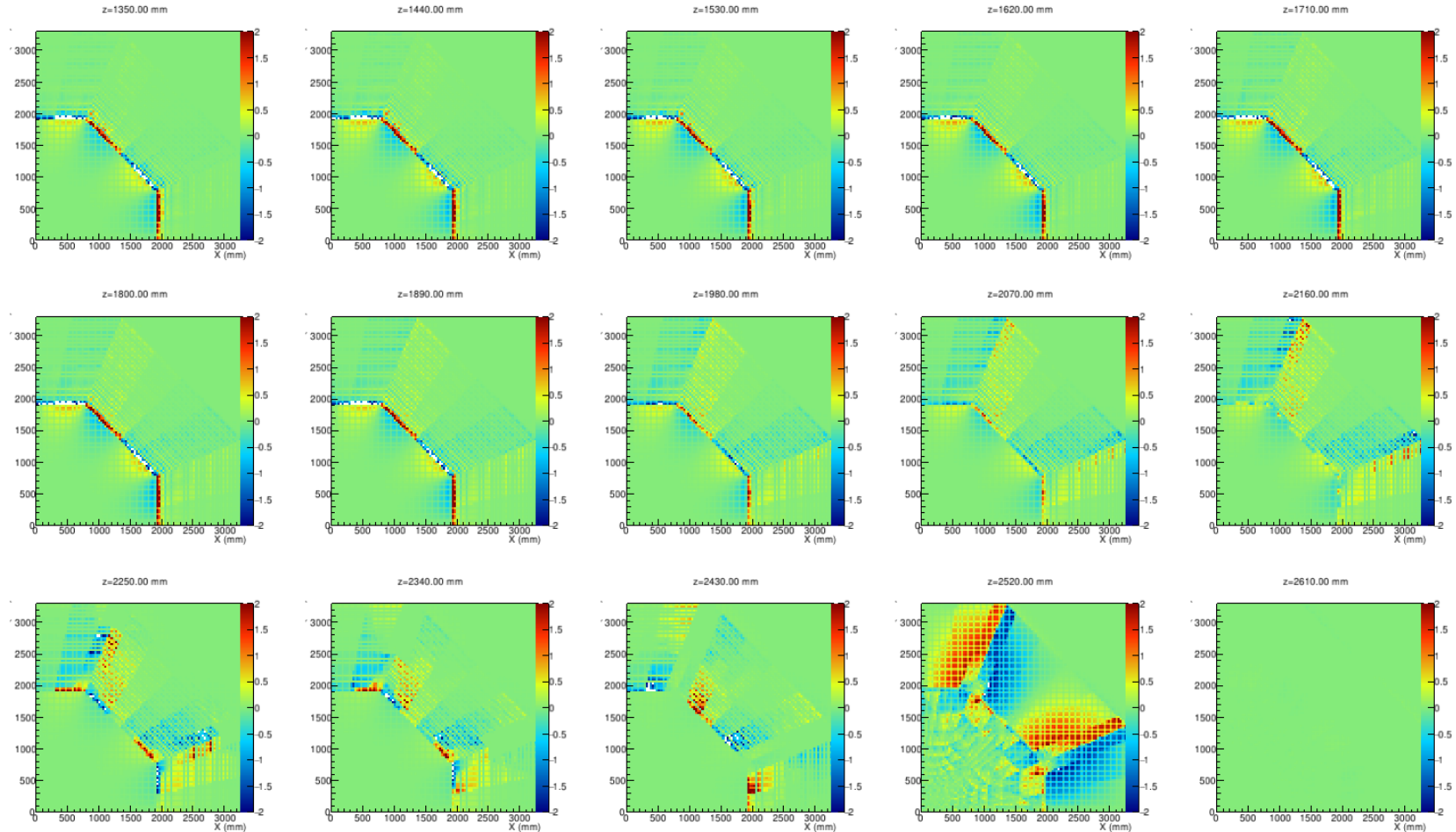
B_{ϕ} (0mm < z < 1400mm) [Novosibirsk group]



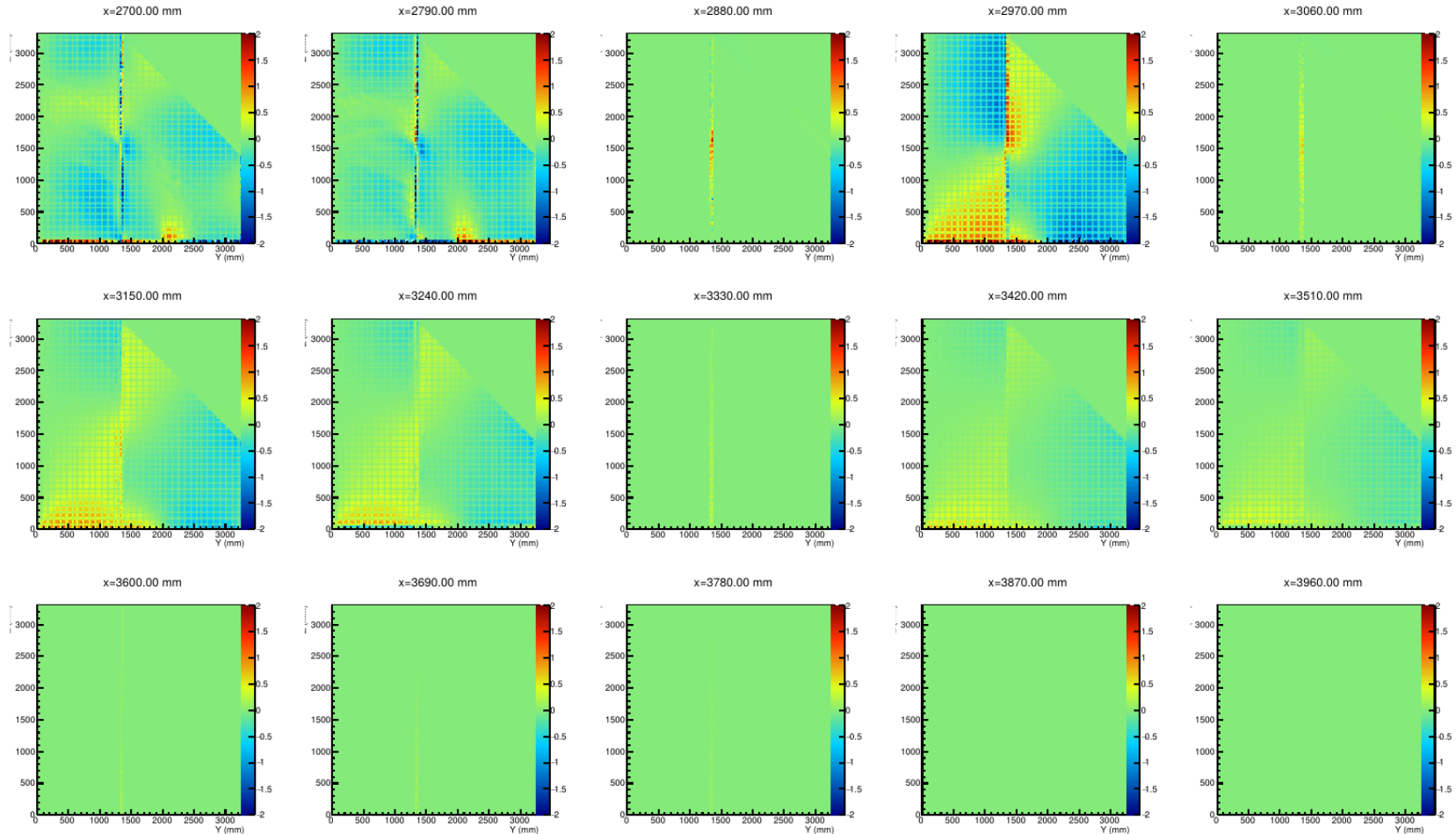
B_{ϕ} (1500mm < x < 2900mm) [I. Moshkovky]



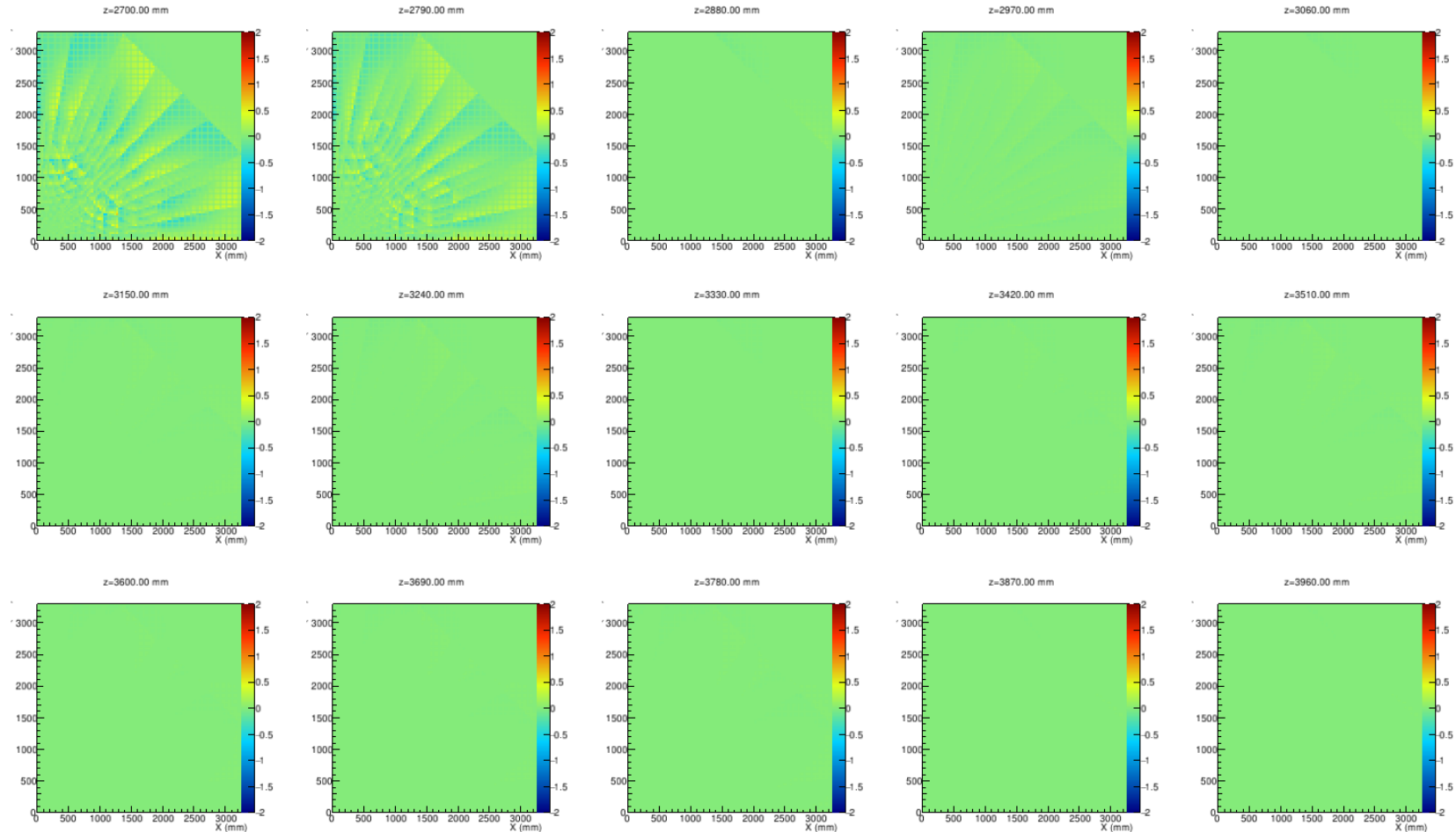
B_{ϕ} (1500mm < z < 2900mm) [Novosibirsk group]



B_{ϕ} (3000mm < x < 4400mm) [I. Moshkovky]

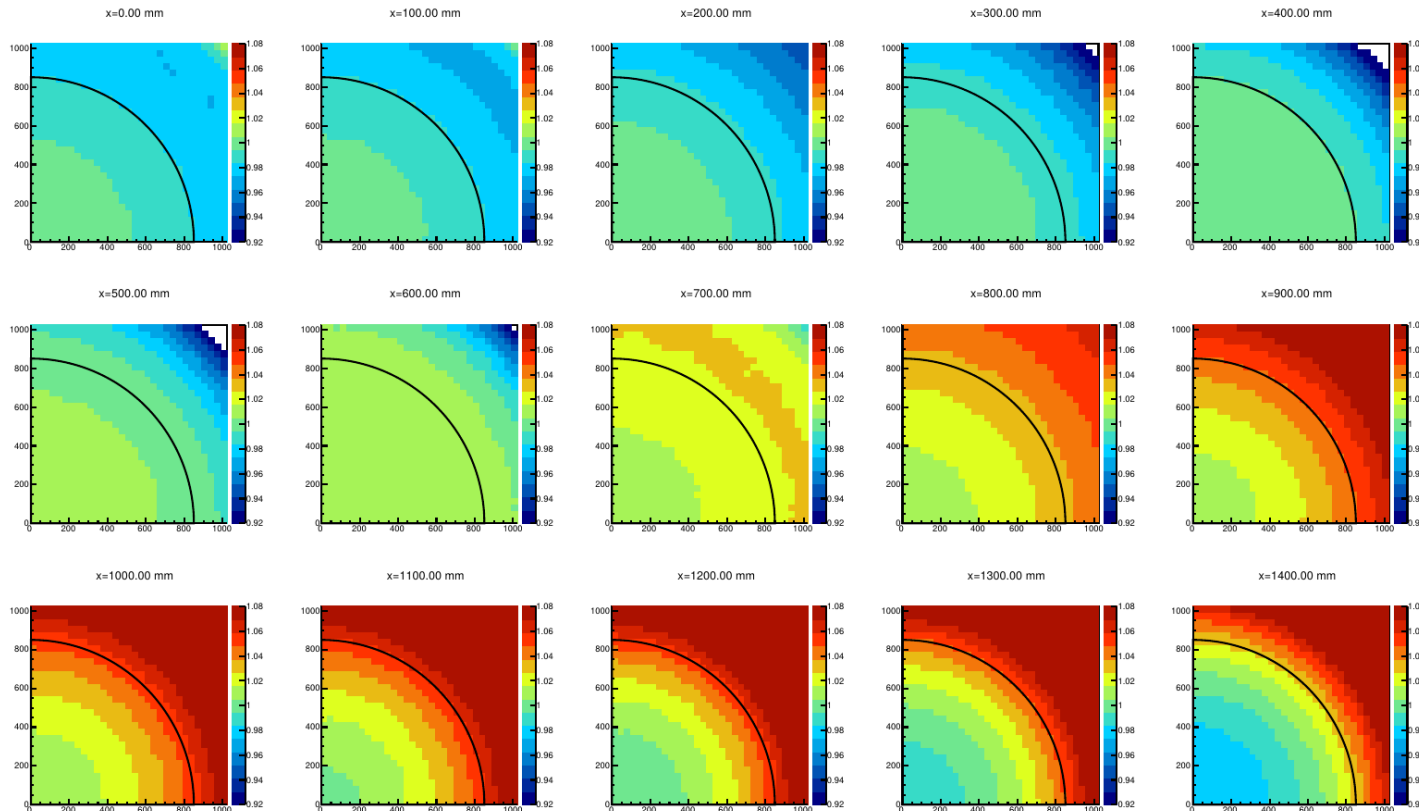


B_{ϕ} (3000mm < z < 4400mm) [Novosibirsk group]



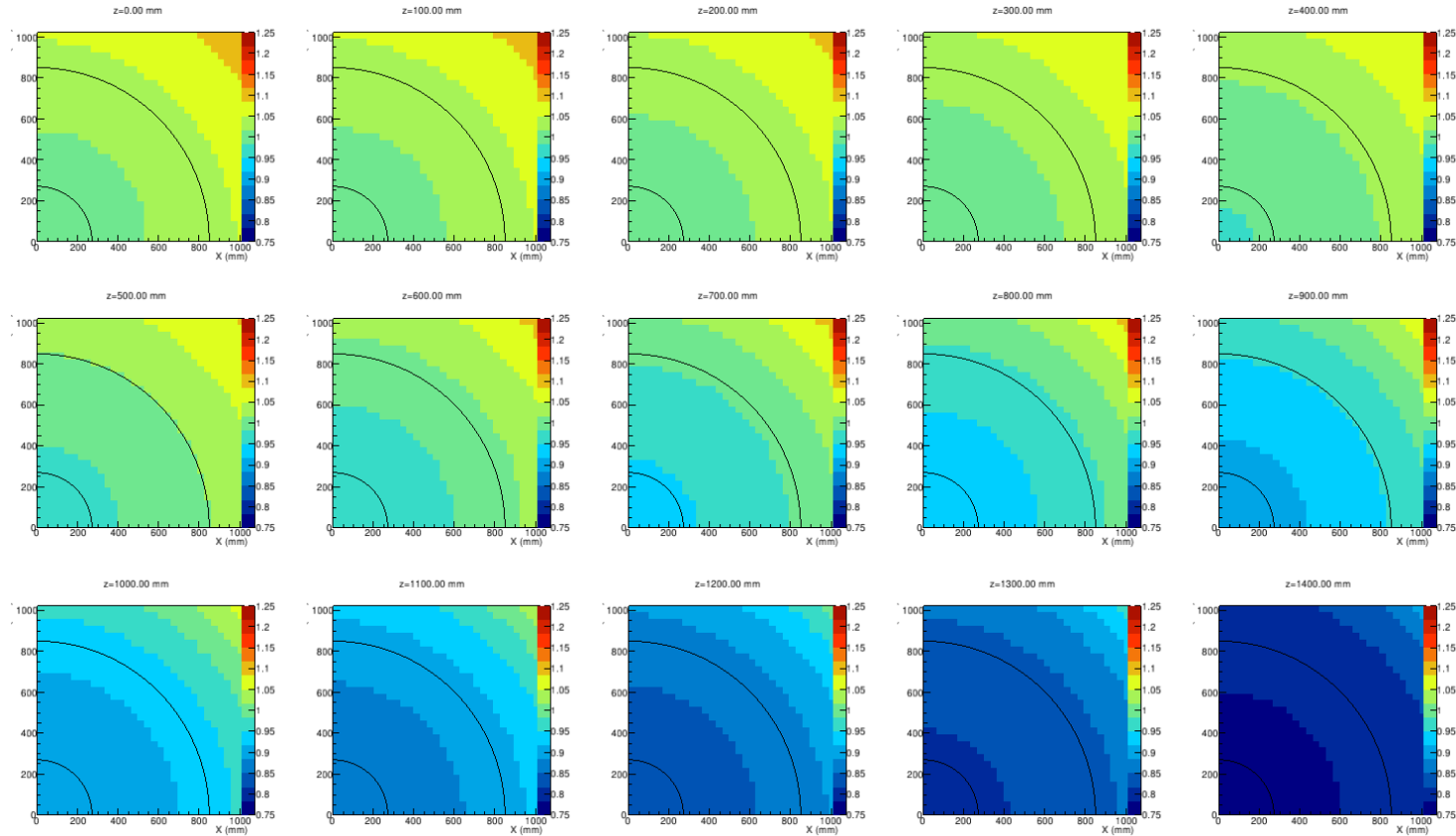
Nonuniformity of B_x in the tracker

Nonuniformity of B_x ($B_x/B_x(0,0,0)$) in the tracker [I. Moshkovky]



- In the center $B_x = 1.234$ T
- The nonuniformity in the tracker is $\sim 5\%$

Nonuniformity of B_z ($B_z/B_z(0,0,0)$) in the tracker [Novosibirsk group]



- In the center $B_x = 1.202$ T
- The nonuniformity in the tracker is up to 25%

Summary

- For both field maps the field in the center of the detector is ~ 1.2 T.
- The main differences:
 - magnetic field in the Novosibirsk map decreases much faster along Z-direction (nonuniformity is 25%, for the old f.m. – 5%),
 - the distribution of the field in the yoke notably different.
- The field nonuniformity of $\sim 25\%$ is very different from 5% for pattern recognition.