

Simulation study of effects induced by final granularity of detector in particle flow deduced from experimental data in relativistic heavy ion collisions

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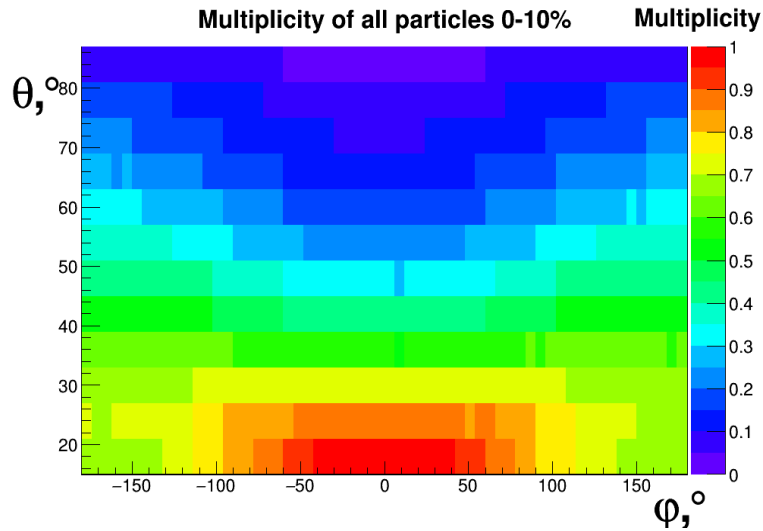
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Goryunov A.G., Dr. of tech. sciences, head of department EAFU , TPU

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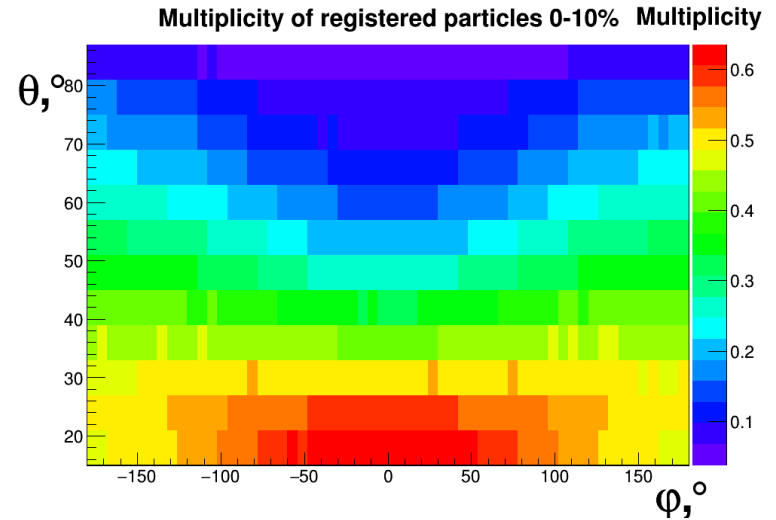
Current tasks

- To see if proposed method [Pavel Tlusty presentation at XXXII meeting at GSI] is correct
- Make description of real diploma work [main part]
- Write and check “Social responsibility” part of diploma and “Financial management” part

Multiplicities



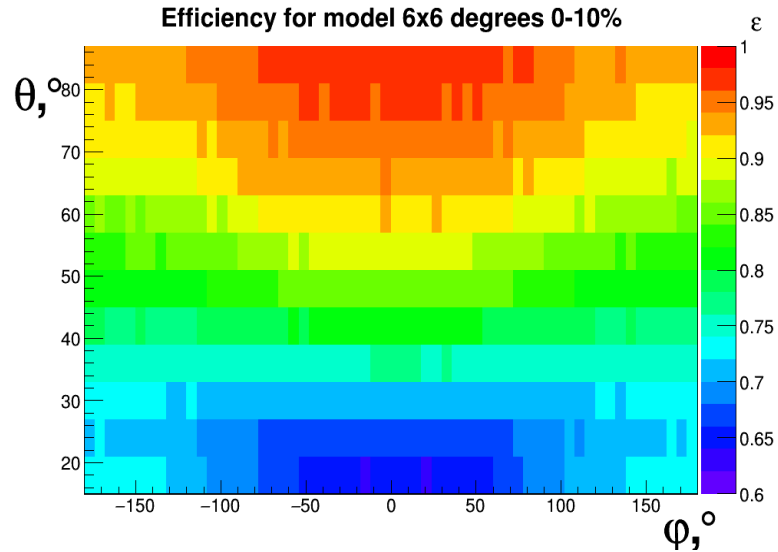
Multiplicity of all particles



Multiplicity – for 6x6 degrees model

Multiplicity – average number of particles that hit a cell during one event

Efficiency of registration



Efficiency of registration is a number between 0 and 1 showing which part of all particles was registered

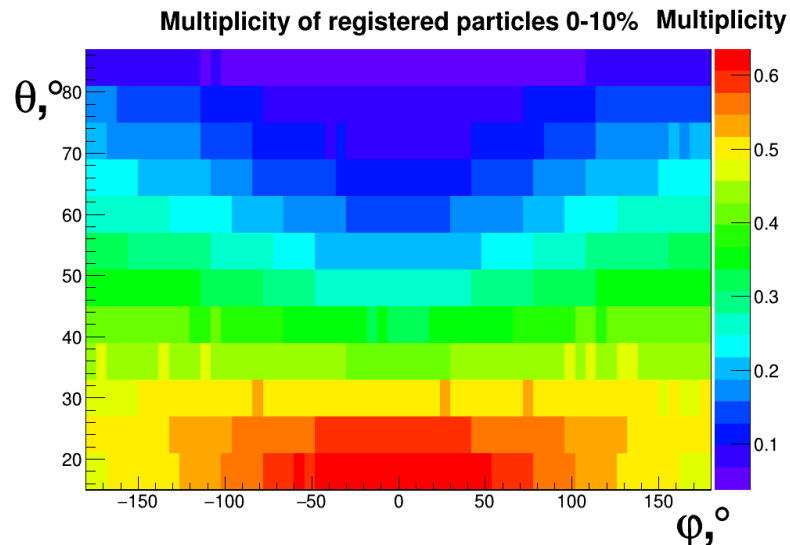
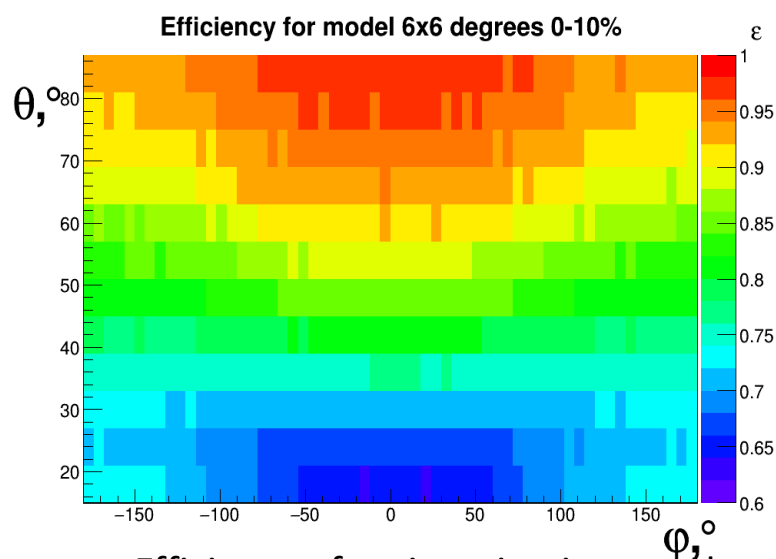
Proposed method

- It was suggested to express efficiency of registration as a linear function of the mean multiplicity of particles

$$\varepsilon = 1 - k * \langle mult \rangle$$

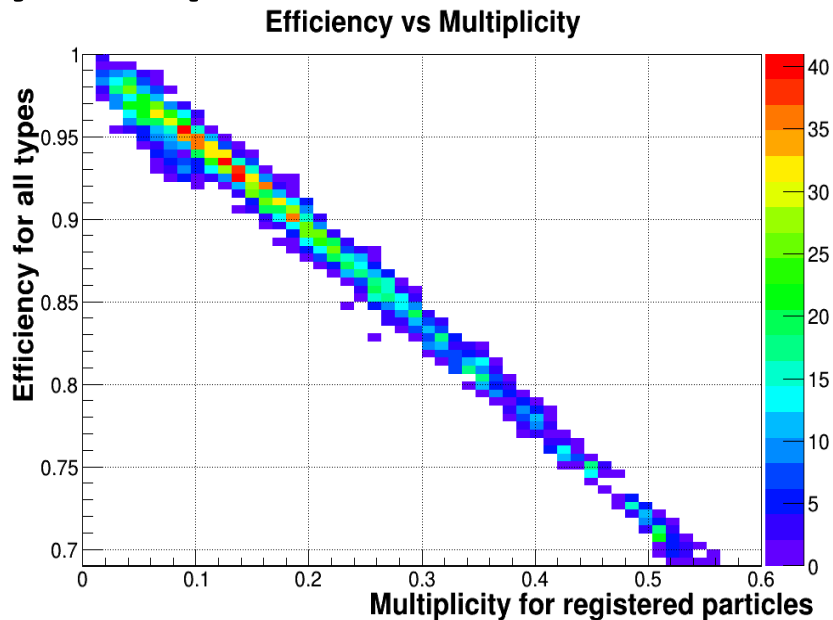
- Accordingly, construct a correction matrix in the azimuthal and polar angles, which should be as closely as possible to the efficiency of registration matrix
- Select the parameter k such that the direct flows are symmetric and pass through the zero point - that is, the absence of a flow at zero rapidity
- Further, calculate the flow of negative and positive pions taking into account the correction matrix and add weight of particles.

Efficiency of registration



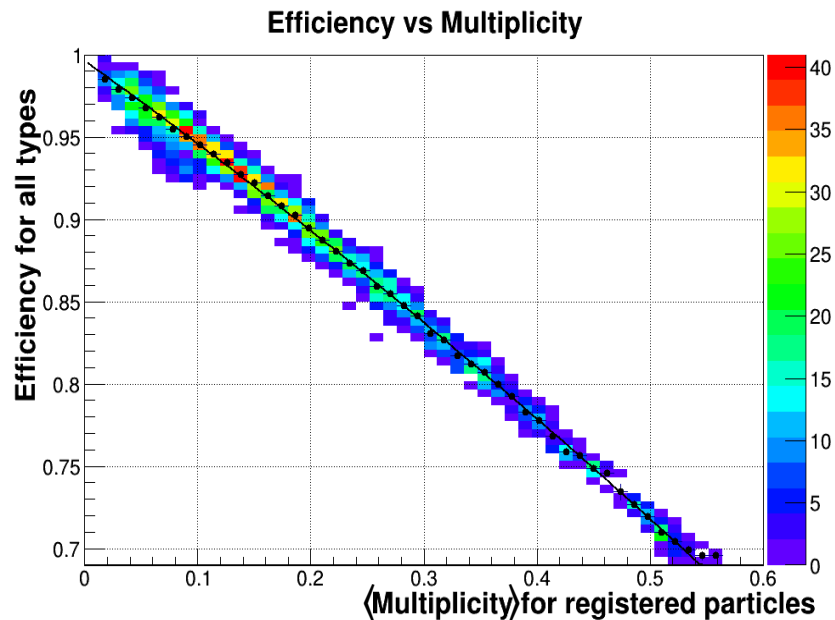
Efficiency of registration is a number between 0 and 1 showing which part of all particles was registered

Efficiency dependence on multiplicity

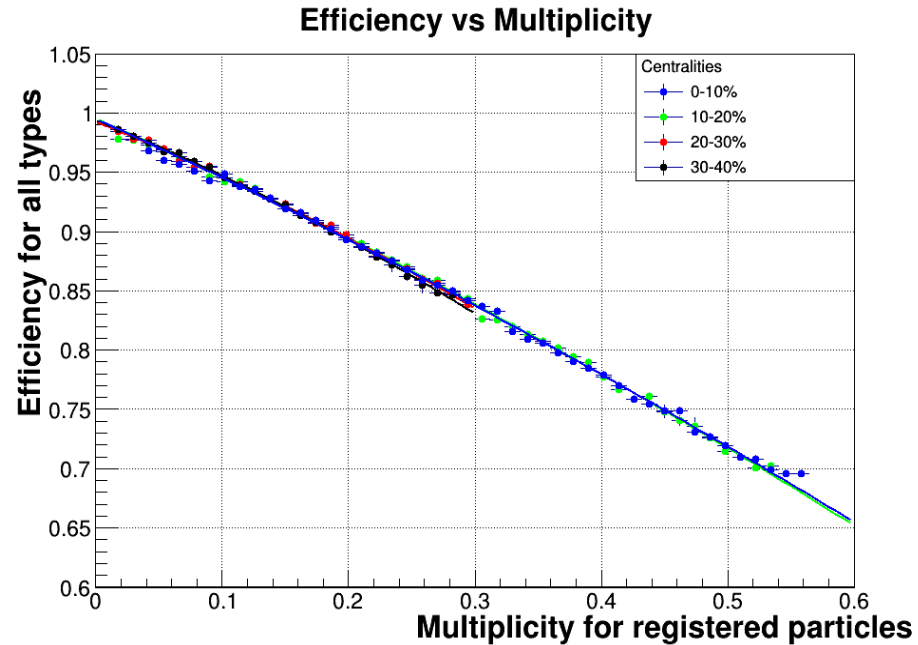


$$\varepsilon = 1 - k * \langle mult \rangle$$

For all types of particles

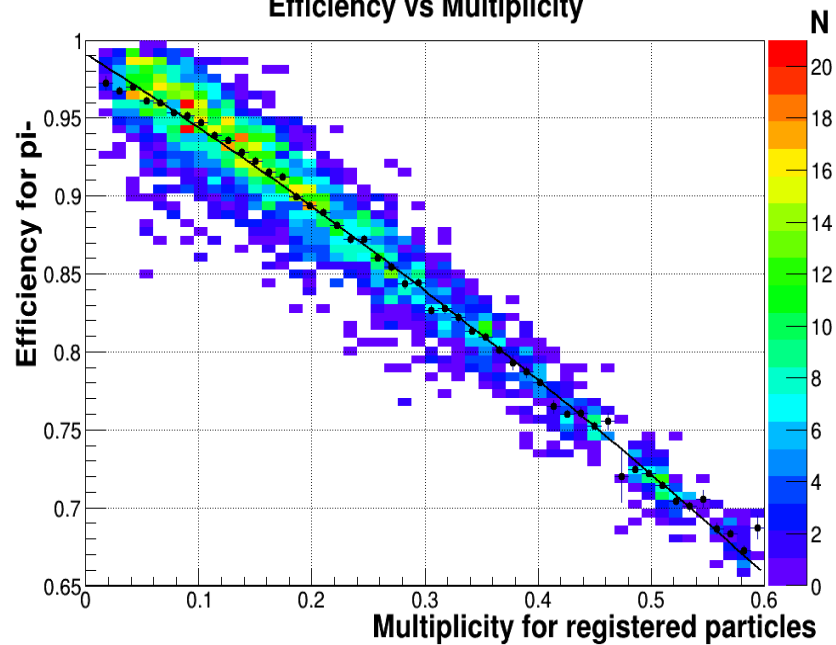


Different centralities

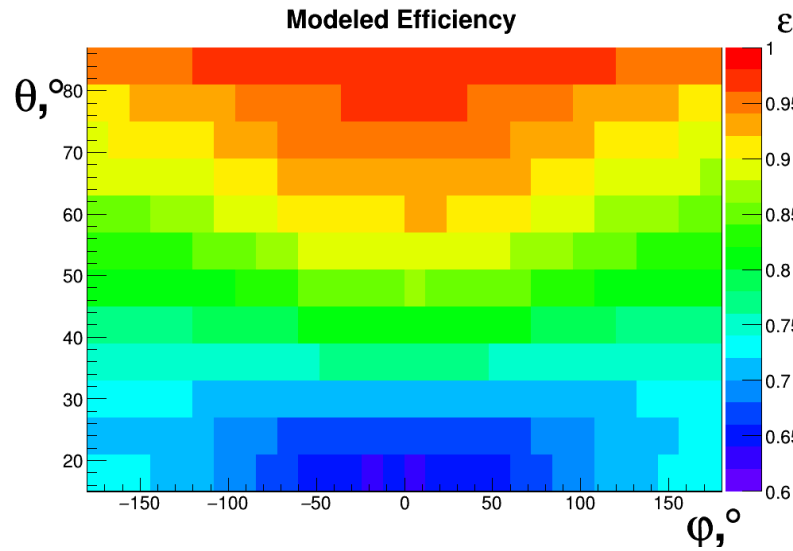


For π^-

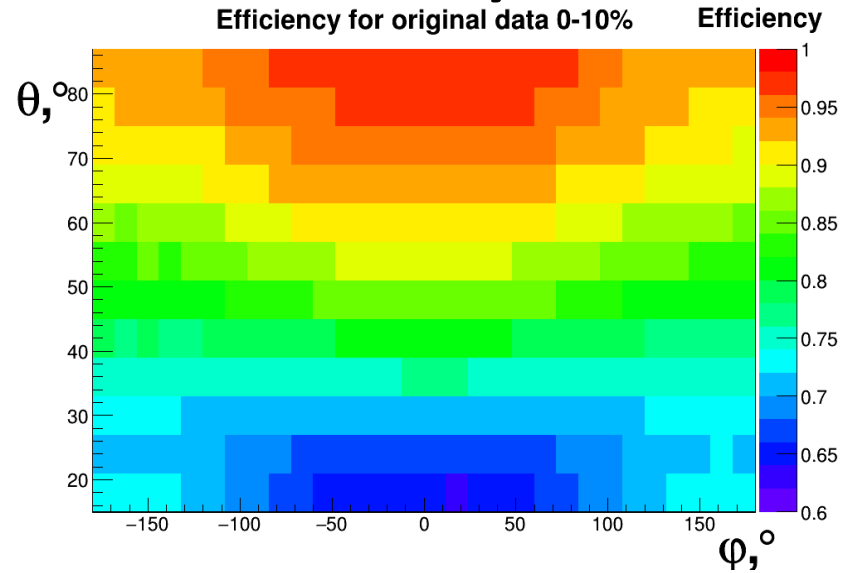
Efficiency vs Multiplicity



Comparison for Efficiency

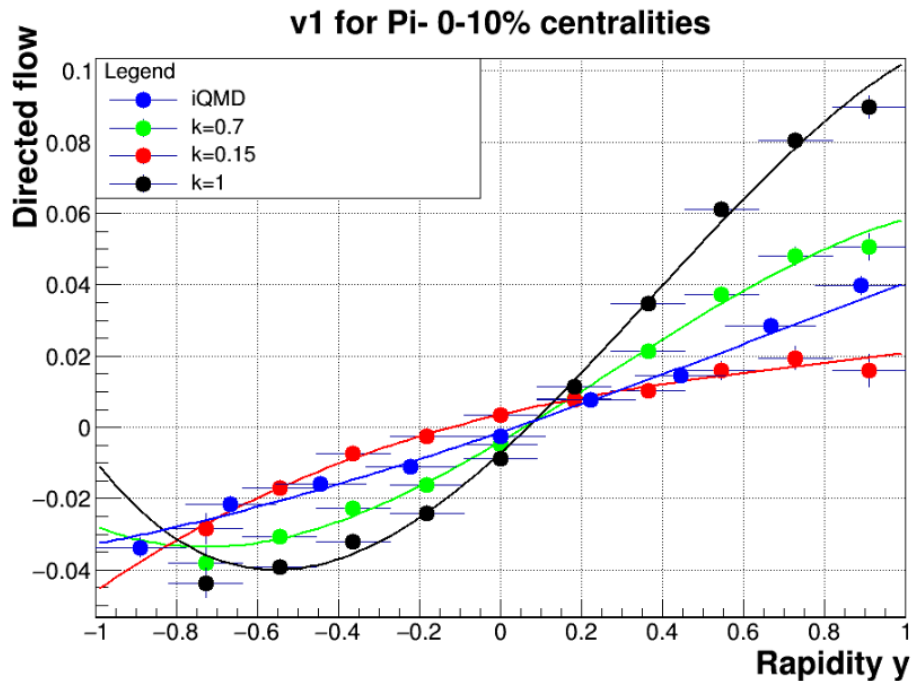


Constructed efficiency of registration



Real efficiency of registration

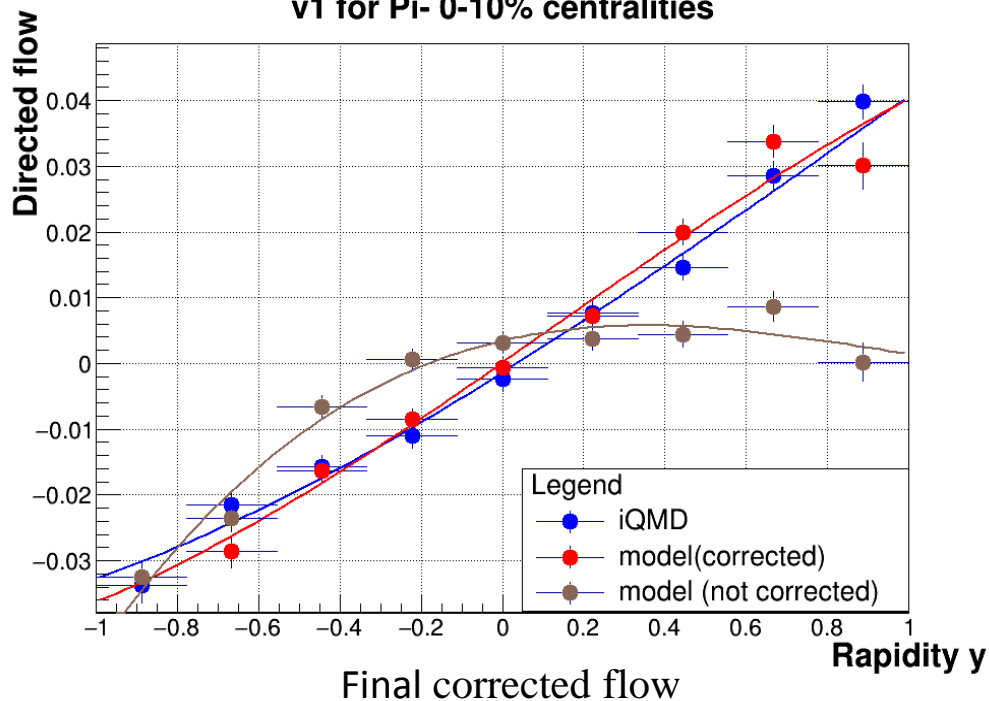
Different slopes



Flow dependence on different efficiency of registration

Corrected model

v1 for Pi- 0-10% centralities



Results and conclusions

- Proposed method [Pavel Tlusty presentation] works and can be applied to real data with some accuracy
- Description of real diploma work [main part] is done
- “Social responsibility” part of diploma is written and checked
- “Financial management” part is written

Further actions:

- HGEANT model analysis
- Finishing literature part and financial part of diploma thesis

Thank you for attention