SIMULATION AND MEASUREMENTS OF DETECTOR ACCEPTANCE

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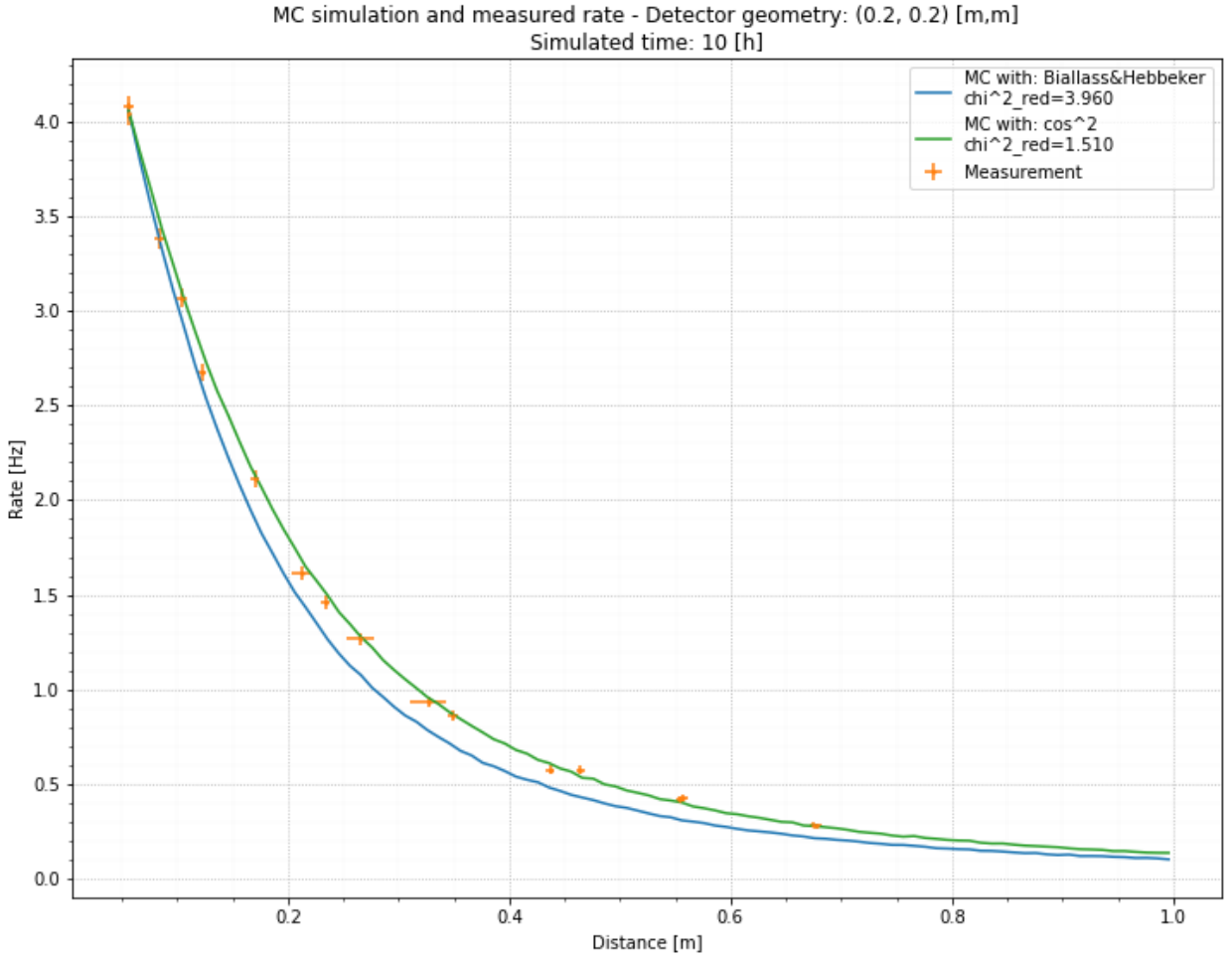
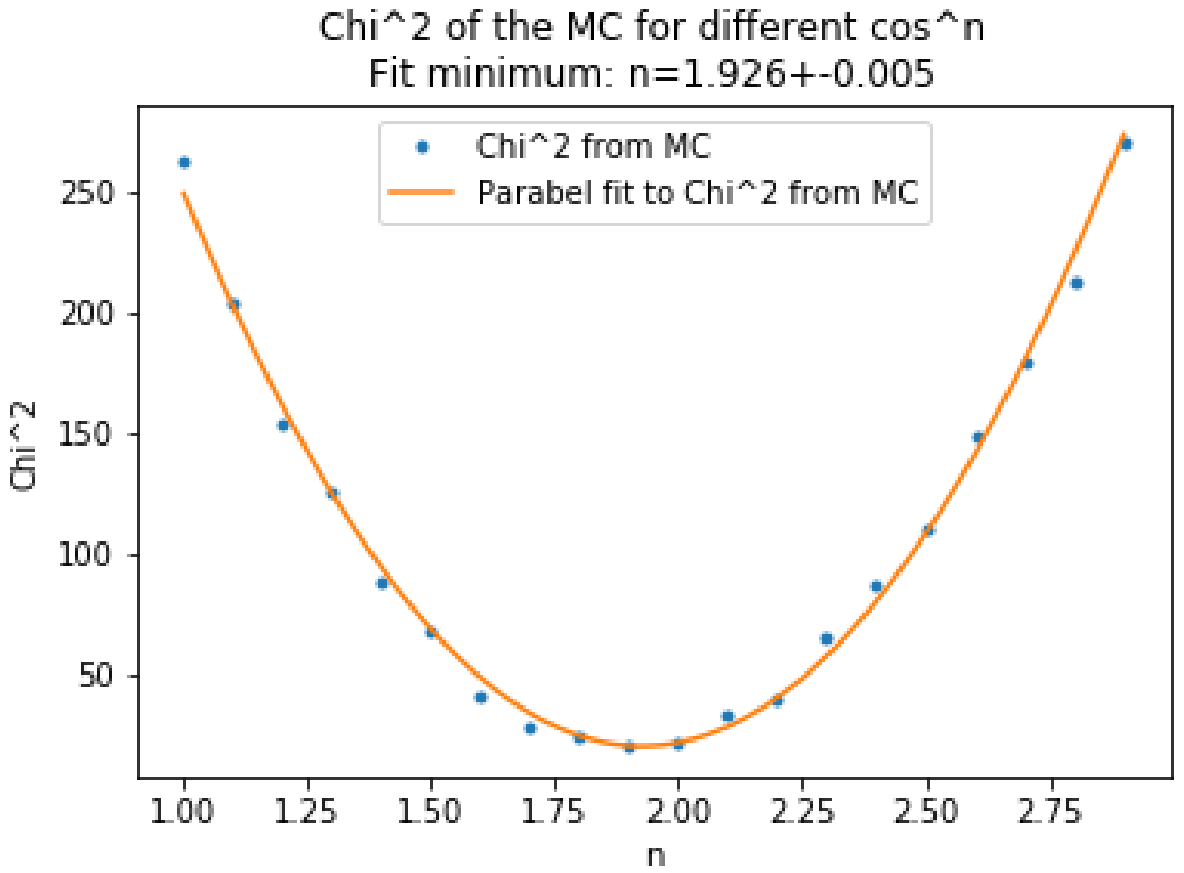
MC SIMULATION

- Did and integrated multiple measurements
- Added new angle density function for cosmics
  - Published by: Philipp Biallass and Thomas Hebbeker
  - Valid form 3GeV to 3TeV
  - Slightly worse match than cos^2
- Fixed some smaller bugs



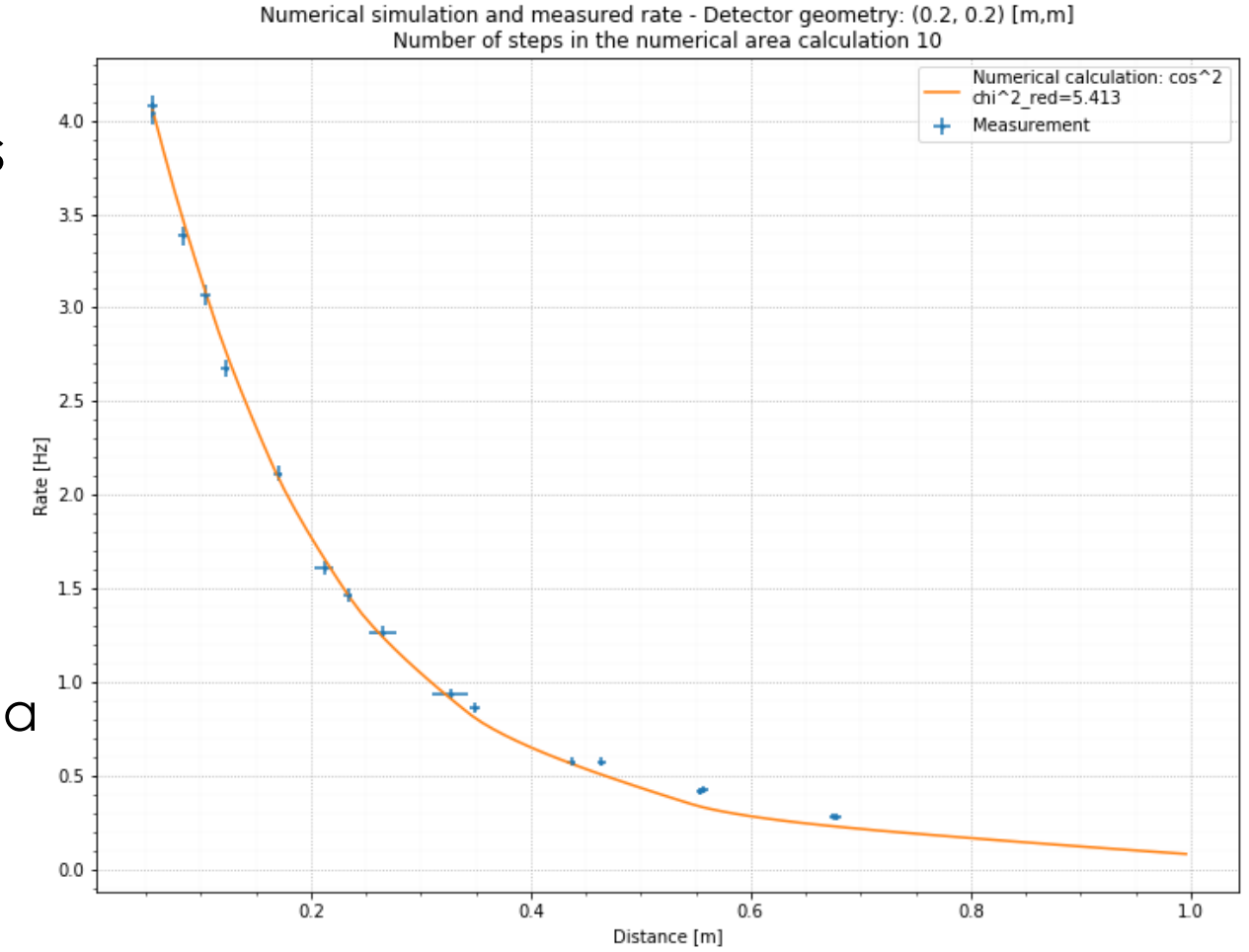
MC SIMULATION

- Fitting of the exponent of a cos^n distribution of cosmics
- For MC not solvable with gradient descent algorithms
  - Non deterministic behavior of MC
- Very close to 2
- Fitting a Polynomial function instead of a parable should yield even better results



NUMERICAL SIMULATION

- Calculates the overlapping area for different angles and distances
- Multiplies the overlapping area with the flux from cosmics for that angle area
- Deterministic results
- Considerably faster than the MC
- Adjustable precision of the numerical calculation
  - On the right, the overlapping area was calculated for 10 different angles



NUMERICAL SIMULATION

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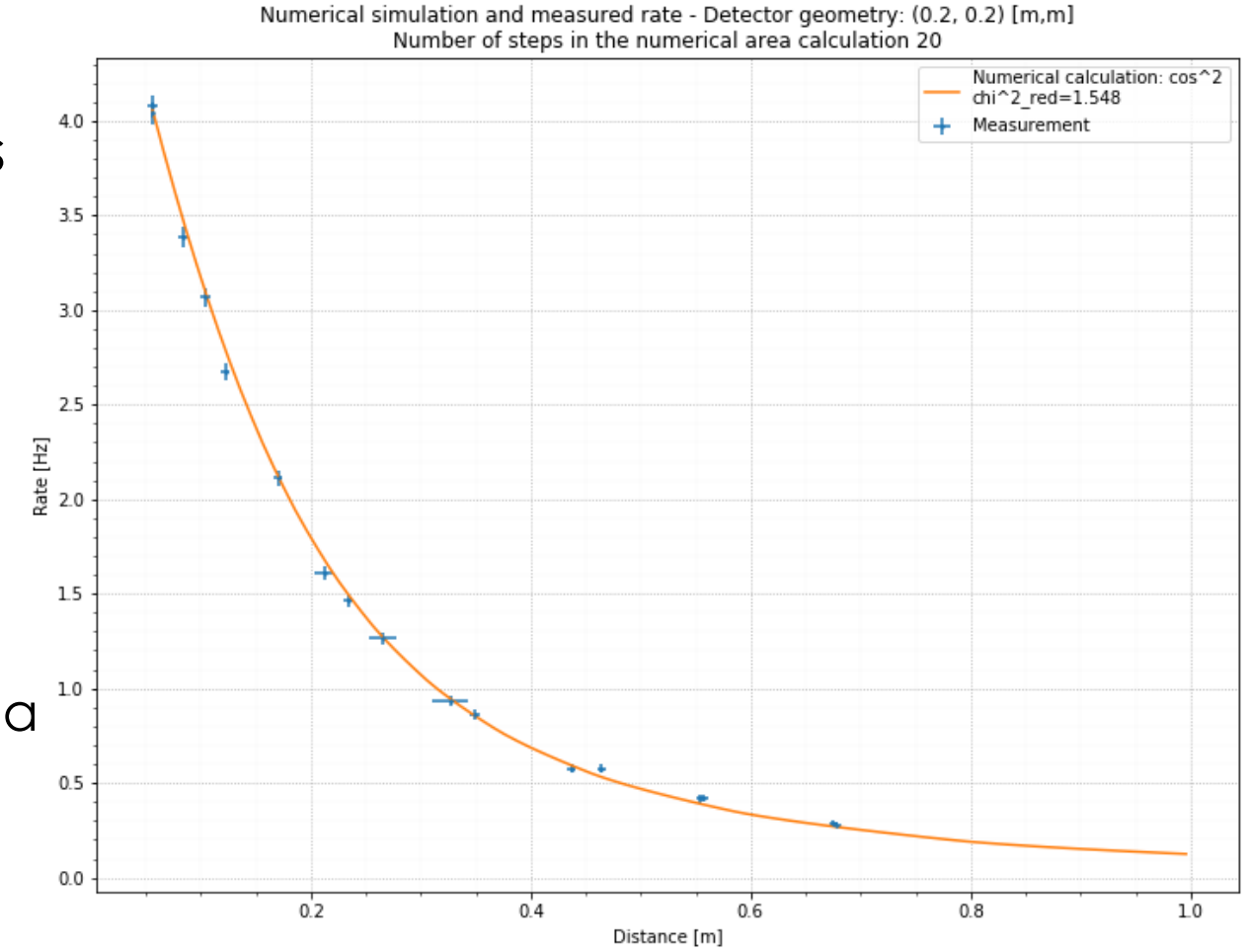
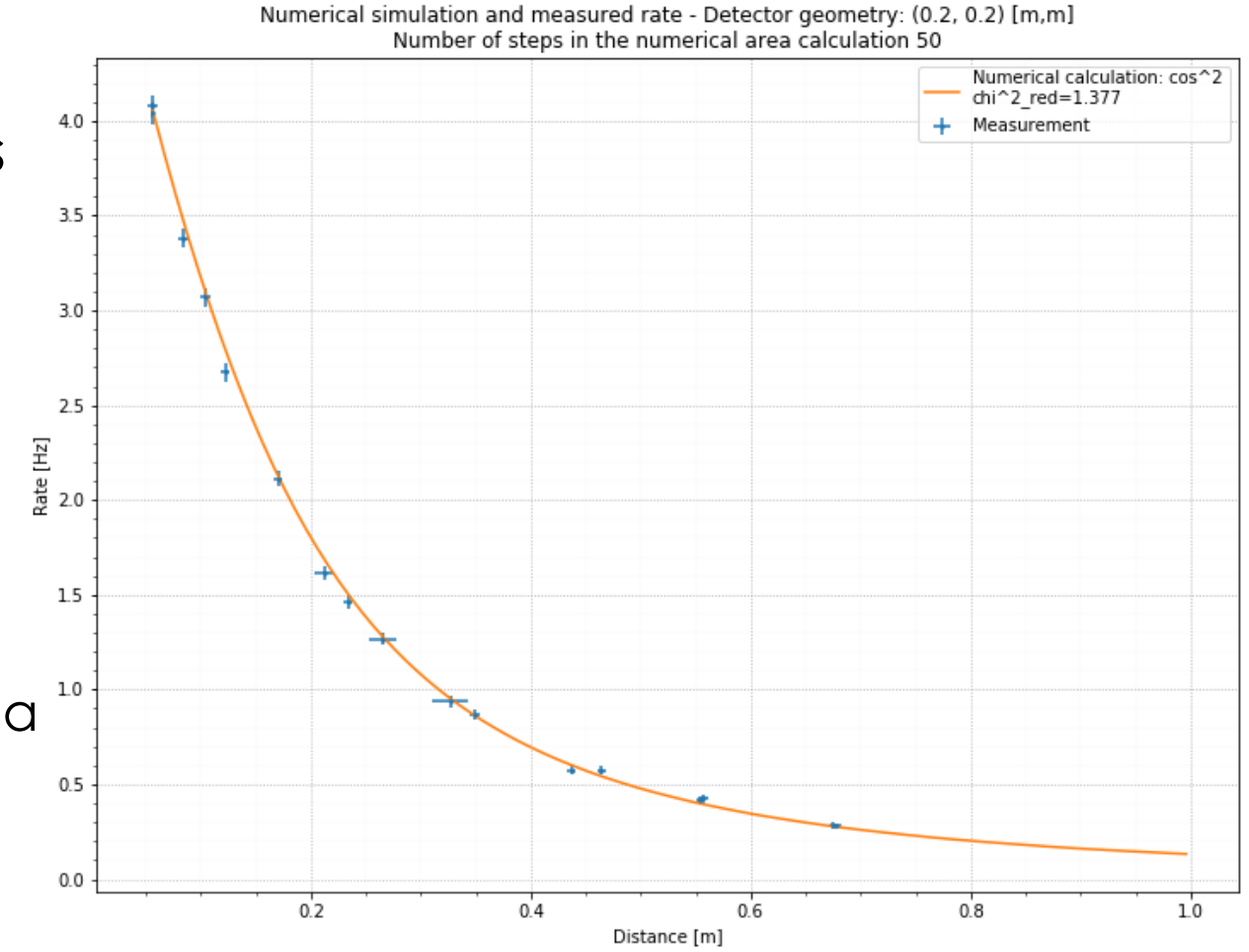
  - On the right, the overlapping area was calculated for 20 different angles



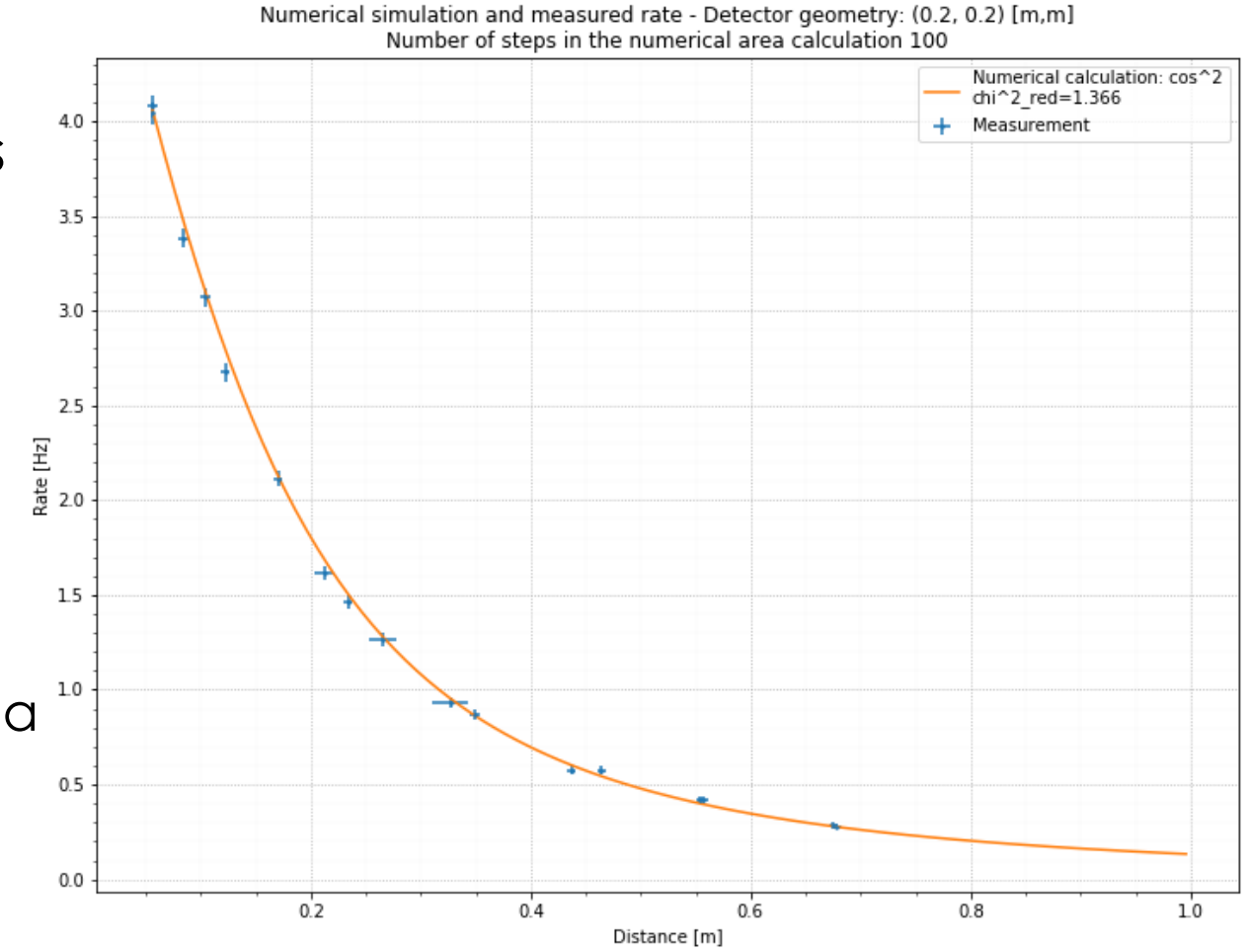
NUMERICAL SIMULATION

- Calculates the overlapping area for different angles and distances
- Multiplies the overlapping area with the flux from cosmics for that angle area
- Deterministic results
- Considerably faster than the MC
- Adjustable precision of the numerical calculation
  - On the right, the overlapping area was calculated for 50 different angles



NUMERICAL SIMULATION

- Calculates the overlapping area for different angles and distances
- Multiplies the overlapping area with the flux from cosmics for that angle area
- Deterministic results
- Considerably faster than the MC
- Adjustable precision of the numerical calculation
  - On the right, the overlapping area was calculated for 100 different angles



NUMERICAL SIMULATION

- Calculates the overlapping area for different angles and distances
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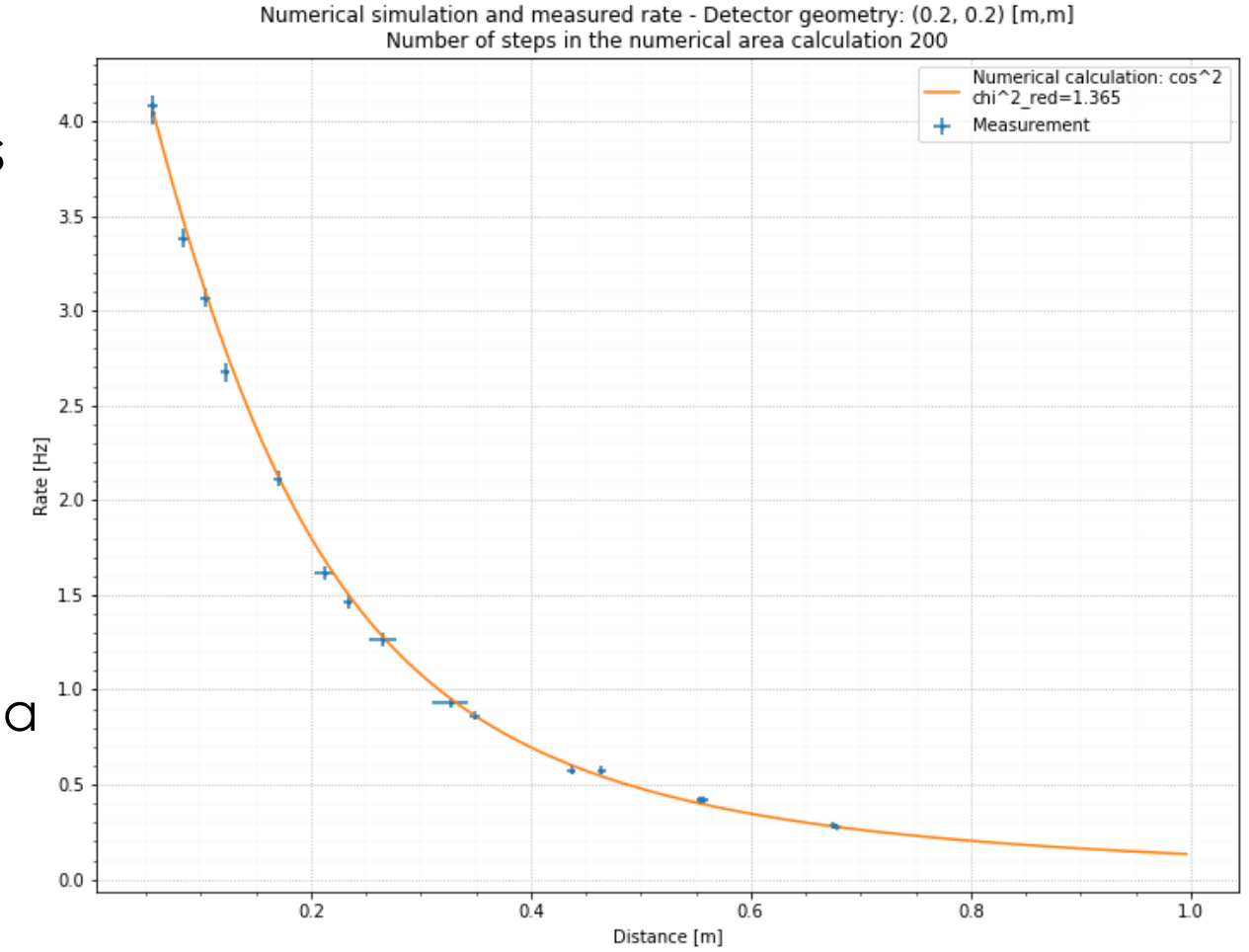
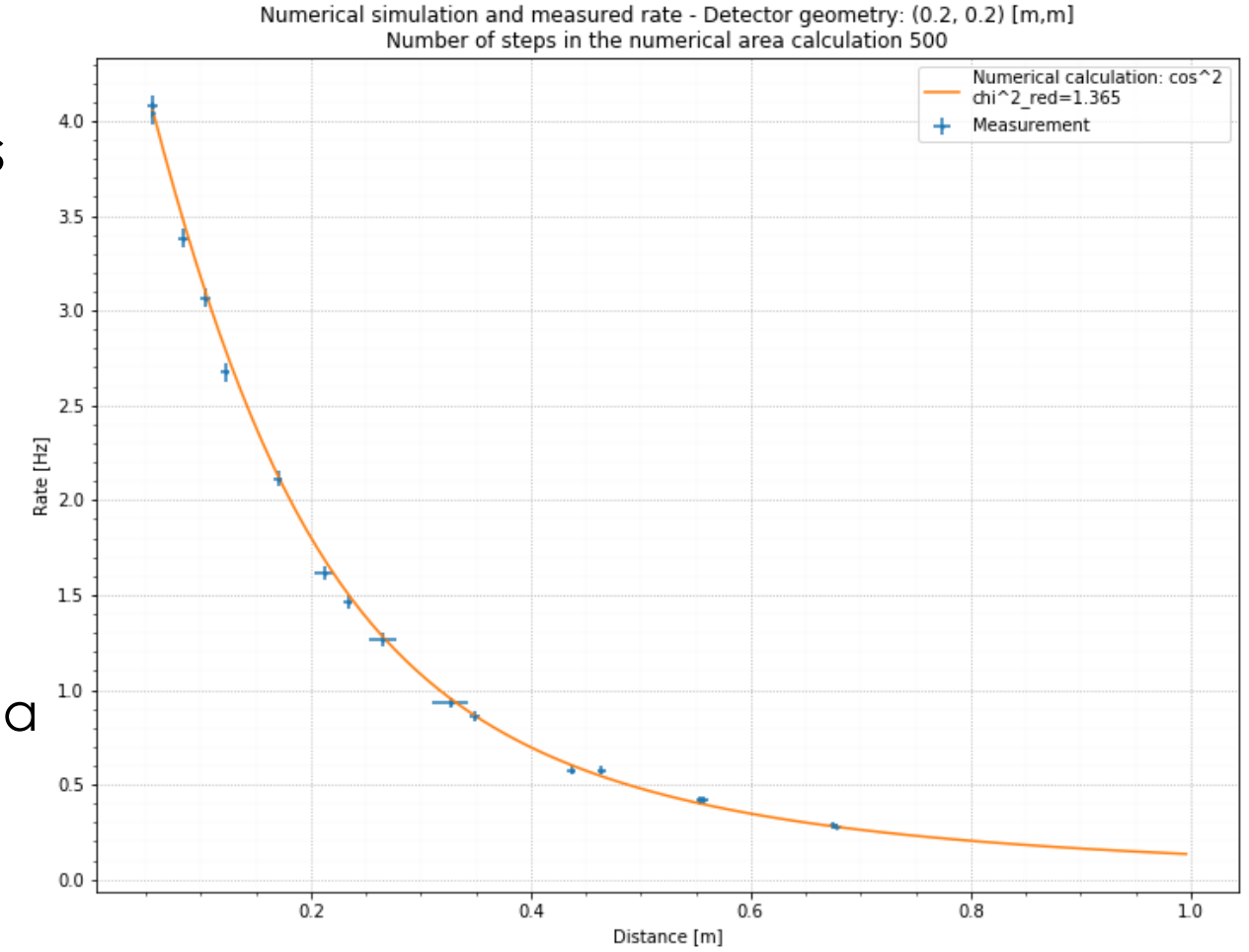
  - On the right, the overlapping area was calculated for 200 different angles



NUMERICAL SIMULATION

- Calculates the overlapping area for different angles and distances
- Multiplies the overlapping area with the flux from cosmics for that angle area
- Deterministic results
- Considerably faster than the MC
- Adjustable precision of the numerical calculation
  - On the right, the overlapping area was calculated for 500 different angles



NEXT STEPS

- Find the optimal “n” for a “cos^n” distribution of cosmics with the numerical simulation
- Try out a polynomial fit for the MC with the “cos^n” distribution of cosmics
- Start working on the µTelescope