

# dcorsika neutrino prediction

Kosta Schinarakis

Wuppertal

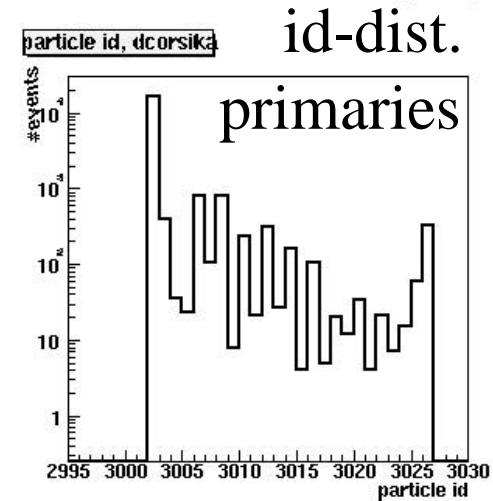
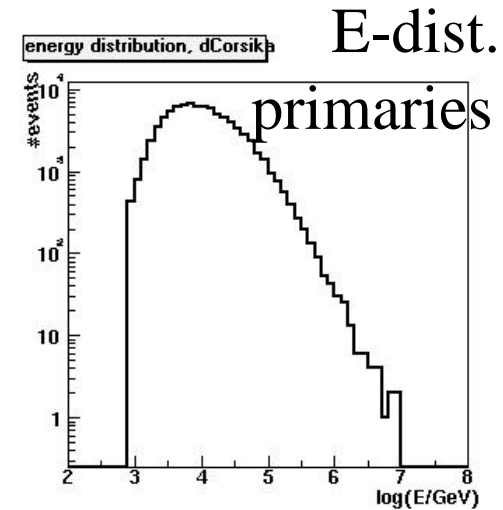
# Motivation

- Discrepancy between MC and measurement
  - 50% to low MC (corsika) prediction for background muon flux (Desiati,Schröder)
  - Too high predictions of atm. neutrinos (Böser)
- Try to connect directly  
the atm. muon and neutrino flux  
by using one source:

dcorsika

# dcorsika

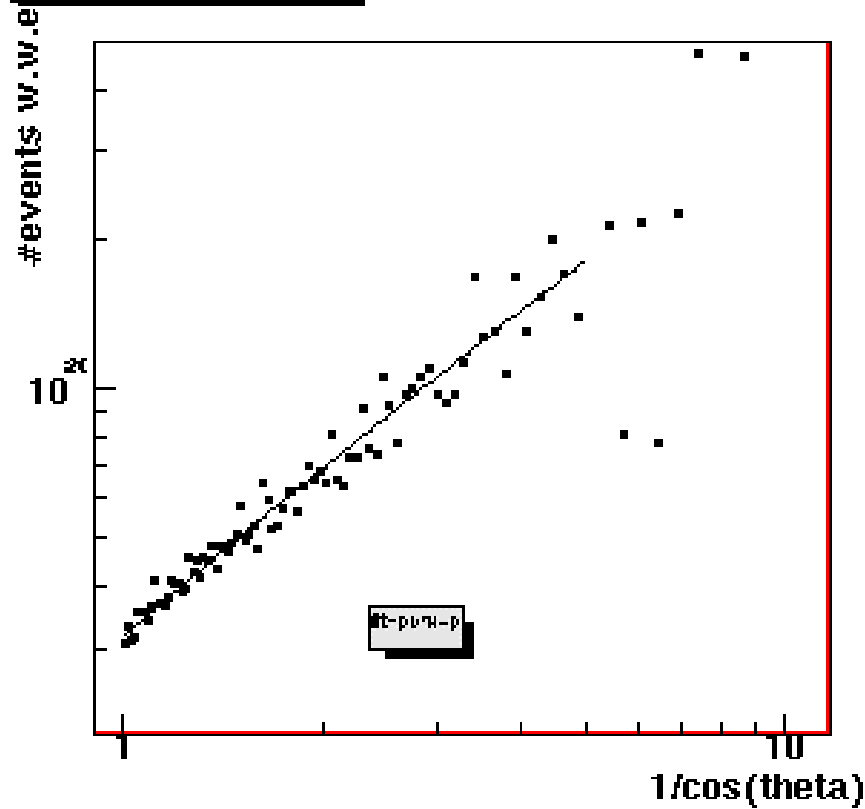
- Sophisticated tool for the simulation of air showers



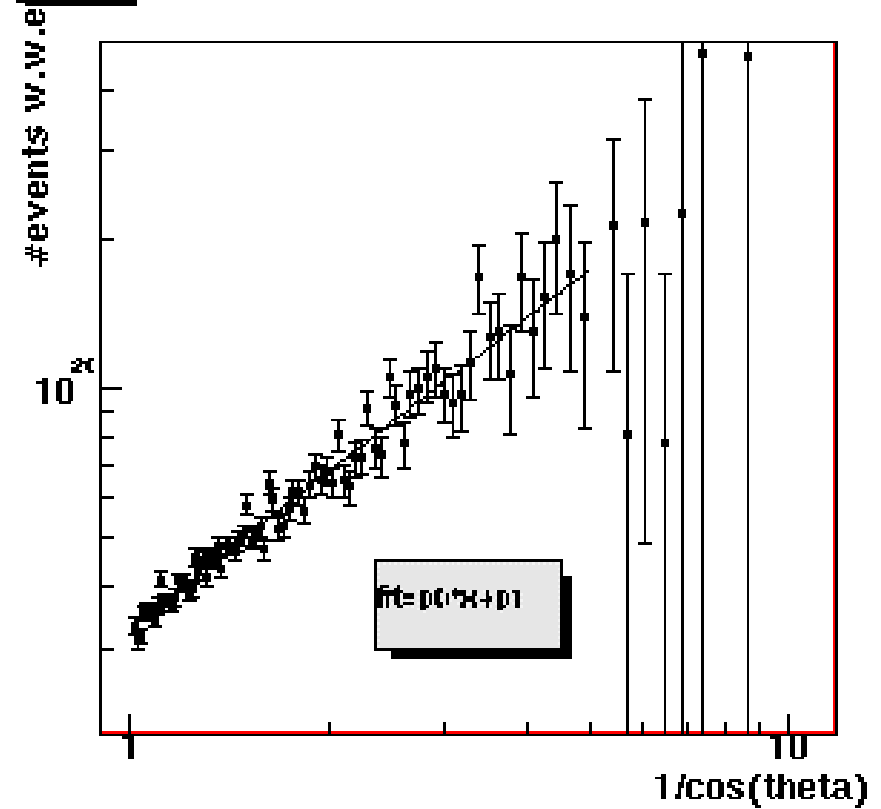
# Cross-checks

- $1/\cos(\theta)$  dependence of muons

1/cos(theta), dcorsika

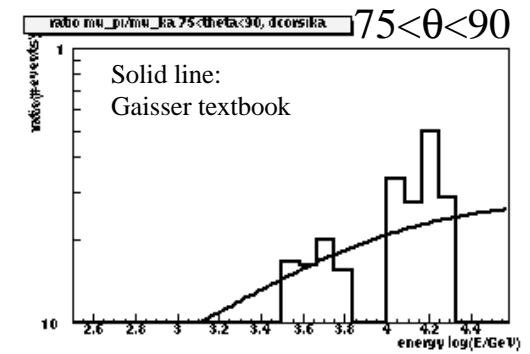
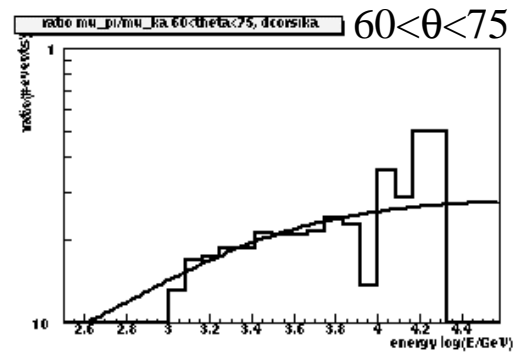
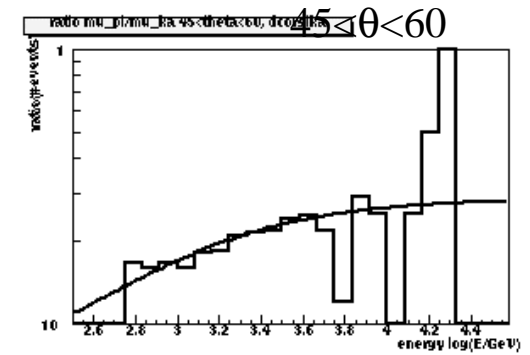
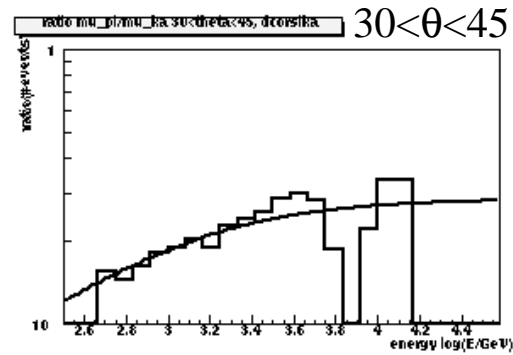
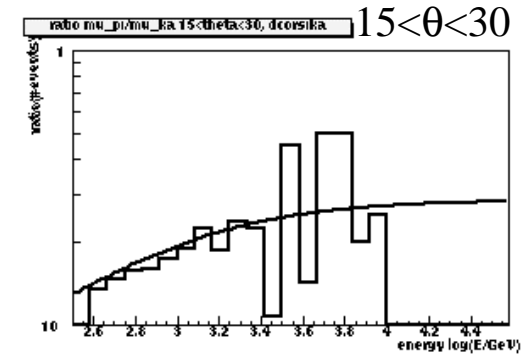
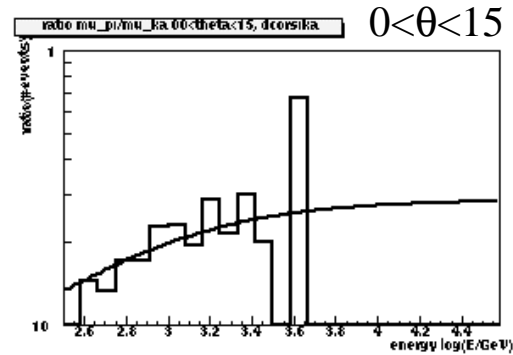


1/cos(theta), dcorsika



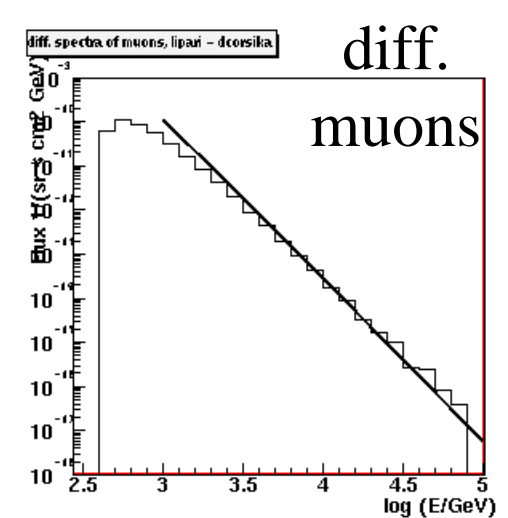
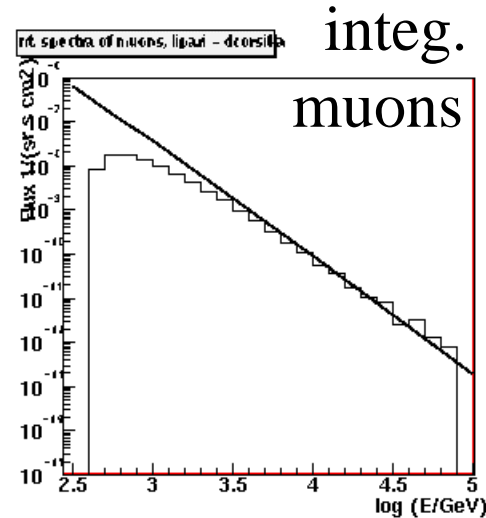
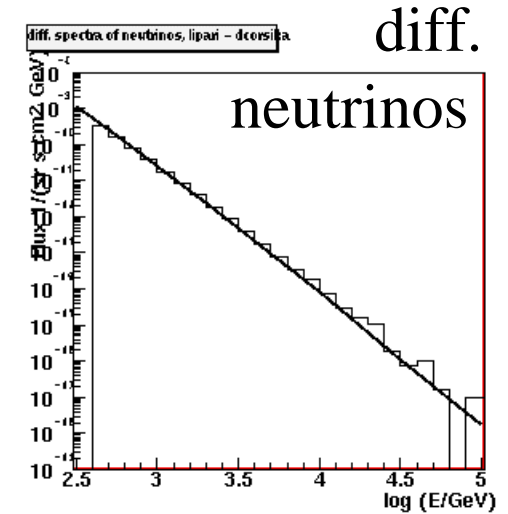
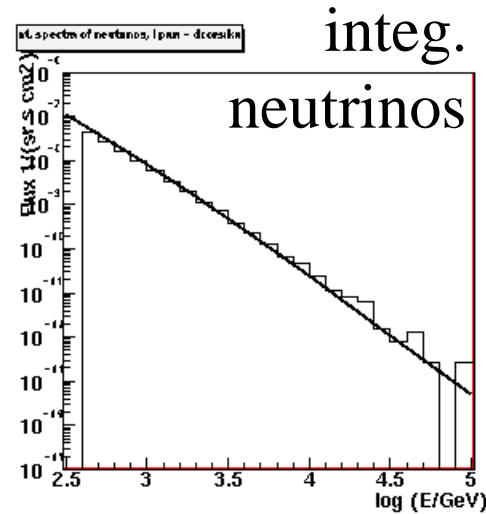
# Cross-checks

- Ratio of muons produced by pions and kaons



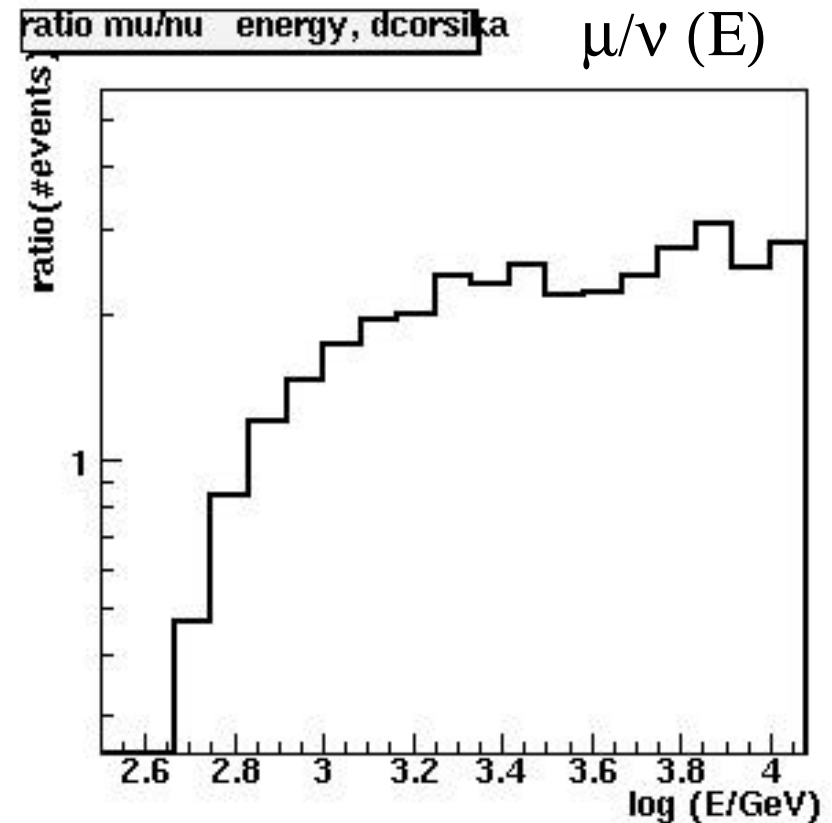
# Cross-checks

- Comparison to the abs. flux, as predicted by Lipari



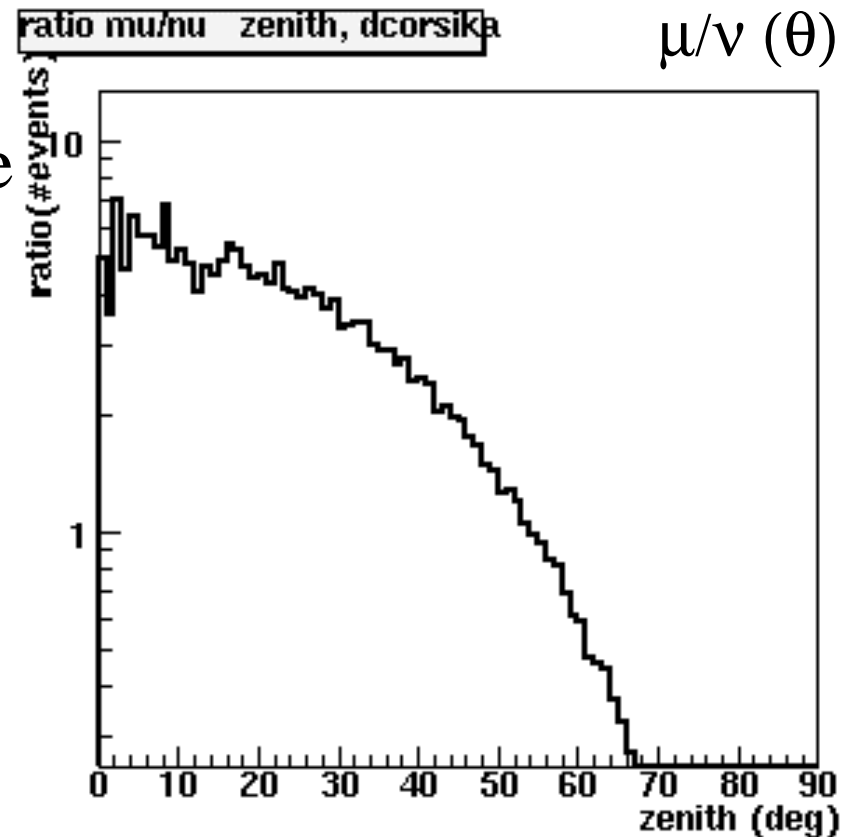
# Current status

- Ratio of muons and neutrinos in air showers
- Advantage:
  - more model independence
  - less assumptions
  - (CR,1.IA)
- Aim:
  - conclude neutrino flux
  - out of muon data



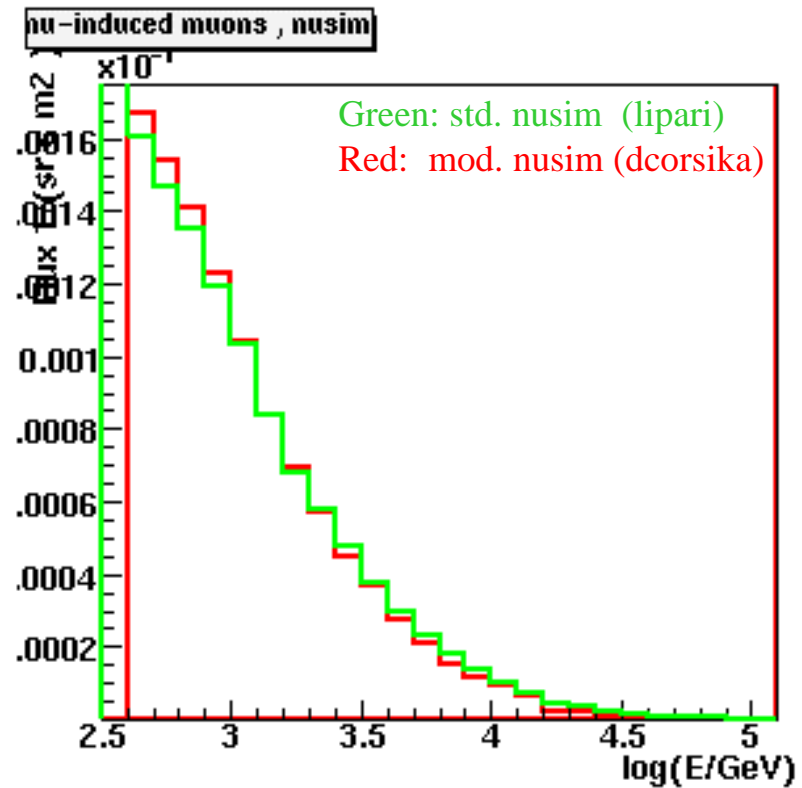
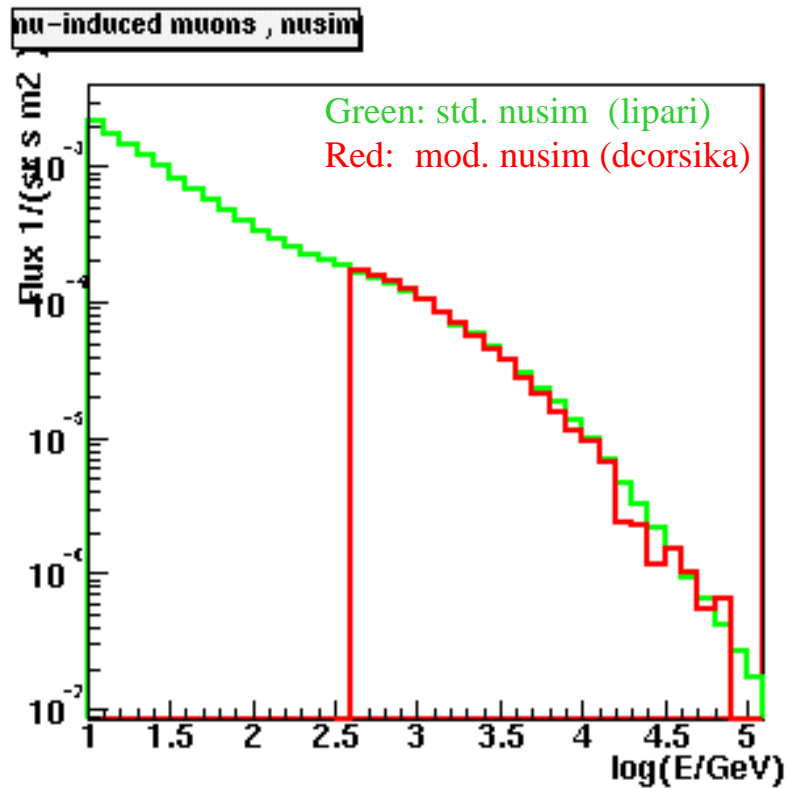
# Current status

- Ratio of muons and neutrinos in air showers
- Advantage:
  - more model independence
  - less assumptions (CR, 1.IA)
- Aim:
  - conclude neutrino flux out of muon data



# Next step

- Neutrino induced muons after earth propagation
- Predicted by nusim



# Conclusion and To-Do-List

- dcorsika predicts correct neutrinos
  - no contradiction so far with lipari
  - but some more checks in progress
- Increase statistic -> Increase energy range
- Closely check fluxes after earth propagation (nusim)