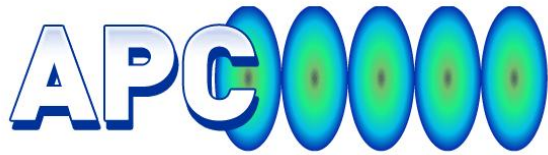# Energy Deposition Group

2008: N. Mokhov, A. Drozhdin, M. Kriss, I. Rakhno, S. Striganov
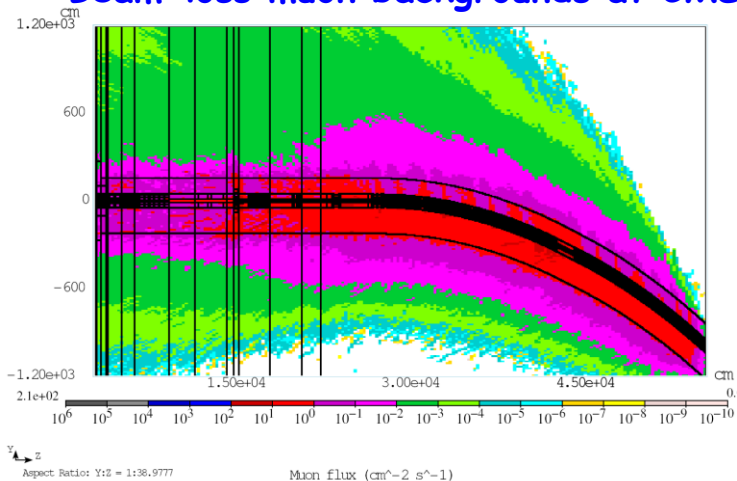
Nikolai Mokhov

Recent Accomplishments (1)

- **Main Injector:** Collimation system design (AD, NM, IR)

- **Tevatron:** Crystal collimation experiment: justification (AD, NM)

- **LARP & CMS:** Feasibility of IR configurations at 10^{35}: SC magnets and detector backgrounds (NM, IR)

- **ILC:** Beam Delivery System (collimation and muons); 0.15 to 5 GeV transfer line collimation; dark current beam loss in Main Linac; ILCTA beam dumps and shielding (AD, NM, SS)

- **MTBF, MuCool, HINS, Booster, MERIT, kaon experiments, muon collider:** Particle yields, energy deposition, beam loss, shielding (AD, NM, IR, SS)

- **MARS Code:** Development of advanced physics models and extension of capabilities (NM, IR, SS)

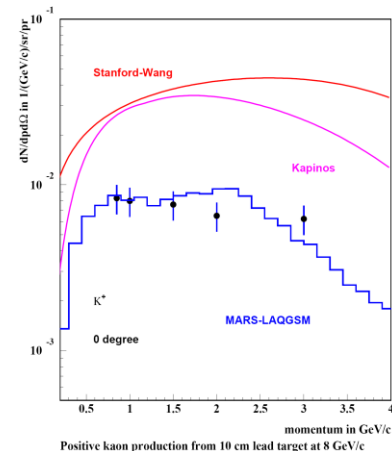- **Computer Servers:** Relocated to XGC-108 & USPAS support (MK)
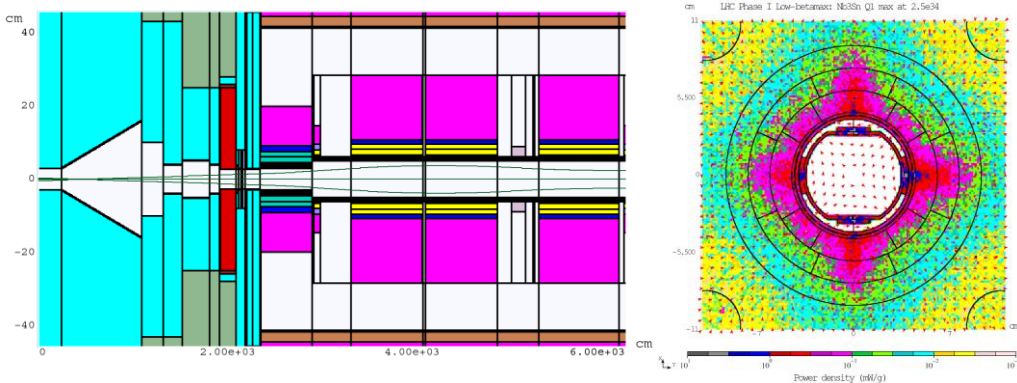
Beam-loss muon backgrounds at CMS
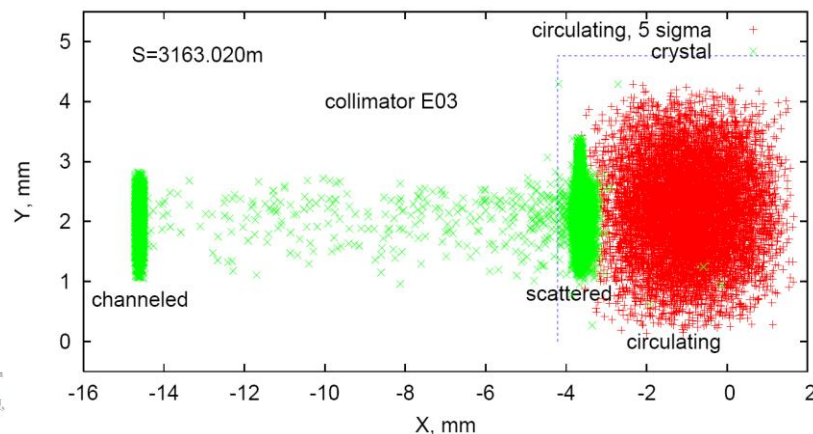

Main Injector collimators

K+ yield at 8 GeV: MARS vs data vs old models

LHC Phase-I JIRS: NbTi/Nb3Sn triplet w/absorbers

Crystal collimation optimization

Computing Support

- **Cartoon Cluster**
  - 16 Sun Solaris servers
  - 6 Intel/AMD Linux servers
  - 300+ users
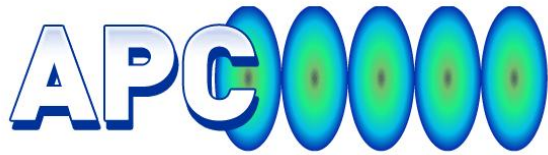
  - APC
    - 40+ users
  - USPAS
  - Relocated servers to XGC-108
    - Room for growth
    - Better A/C
    - Power circuits

- **Heimdall Cluster**
  - 64 slave nodes and growing!
  - 60+ users and growing!

CY08 Plans

- **Tevatron/LARP:** Crystal collimation experiment: replace crystal & goniometer, extend beam diagnostics, EOS beam studies, MOU and work towards full-scale studies in 2009-2010

- **Project X:** Design of MI primary and secondary collimators compatible with higher rate and able to withstand accidental intercept of the full beam; phase-space painting injection; collimation in 8-GeV Linac and transfer lines

- **LARP & CMS:** Joint IR studies (JIRS) for LHC Phase-I upgrade (2.5e34) to optimize the triplet with a US Nb3Sn quadrupole; beam induced operational backgrounds and accidental rad. loads on CMS

- **Muon Collider:** 56-GeV MI beam (targetry etc.), backgrounds for new MC parameters and strawman detector, exotic beams

- **ILC (?), MARS Code (HI, DPA, EMS, GUI), etc.**