

# **MC quarkonium production in CMS**

**Aafke Kraan  
INFN Pisa**

# Current situation MC production CMS

## pp-collisions:

Current quarkonium generation done with PYTHIA 6.409 including NRQCD tuning M. Bargiotti (LHCb)

- Private (small statistics) generation done with singlet model and 3 octet models with different shower options (Kraan).
- Official (large statistics) CMS generation of J/psi's (MSEL=61) includes singlet+octet, NRQCD matrix elements from tuning Bargiotti.
  - Samples almost completed and ready for detector study.
- Official (large statistics) CMS generation of Upsilon's (MSEL=62), includes singlet+octet, same matrix elements except for one PARP(148).
  - Samples almost completed and ready for study.

## HI-collisions:

Please contact Carlos Lourenco

# Future

- **CMS should study also  $\psi'$ ,  $Y(2S)$ ,  $Y(3S)$ , ..**
  - **Most straightforward way for production in near future would be PYTHIA with NRQCD as now.**
  - **This is possible in PYTHIA, but need tuning, how do we do a tuning?**
  
- **Would like to try other models next to NRQCD color-octet model**
  - **After discussions Lansberg, Maltoni, Artoisenet: would be interested getting new singlet model calculations interfaced with PYTHIA to do studies (J/psi and Upsilon).**
  - **Further away future: other models? Soft-colour interactions? Others?**

**Advice on production and measurements would be helpful!**

- **We are few people in CMS interested in quarkonia **production** (but many analysis have prompt quarkonia as background!)**
- **Some of us joined this field very recently, please give us advice on what measurements you (experts) think are most relevant (so CMS can make preparations for analyses proposals ASAP)**
- **Advice about production welcome too!**

