

**Meeting on tau Monte Carlos and related topics –
IFJ PAN Cracow, 16-20 September 2013**

**While we perform registration tasks let me say few
words of introduction:**

- **for physics,**
- **for practical aspects.**

Organization

- **(1)** Lunches: (registered)-participants should mark by 10 am each day, if they plan to come. The list is attached to the door of the meeting room. We estimated (and pre paid) 15 lunches for each day. If there will be more of us, locals will have to pay. In general lunches are expected to start at 1 pm.
- **(2)** Dinners: whoever want may mark the meal-list as well. Each day, unless special announcement, we will meet at 7 am at Market Square (see the last slide). We may want to phone some restaurant and tell how many places we need.
- **(3)** Wi-Fi: Login and password is marked on the door. If you have troubles please contact our expert, who is taking care of video connection etc.
- **(4)** Office space: if you need a desk for the afternoons please contact Ms. Mosurek our secretary, Anna Kaczmarska, Beata Murzyn secretary of Experimental group or Andrzej Bozek (each of us has 2-4 places in our rooms at disposal)
- **(5)** Meeting room: 5301, coffe breaks are served in room: 4208
- **(6)** Indico web page where speakers can upload their slides:
<https://indico.cern.ch/conferenceDisplay.py?confId=261349>

Inter-related topics require competence sharing.

- **(1)** Tau decay in itself; Monte Carlo construction and development; tests, program efficiency, reliability, openness for the new parametrization, tests of implementation.
- **(2)** Theory behind construction of currents, systematic approach, parameters to fit, relation to principles resulting from QCD. Validation on the basis of theoretical considerations.
- **(3)** Confrontation with the experimental tau decay data. Fitting techniques, use of matrix element multiple weights, projection operators or direct fits in multidimensional distributions. Systematic errors: **theory, experiments, fitting algorithms.**
- **(4)** Reconstruction of tau rest frame and reweighting algorithms, TauSpinner, reweighting for fitting at low energies ...
- **(5)** Background contamination and its control. Bremsstrahlung in decays and bremsstrahlung from production, deformation of observables
- **(6)** Bremsstrahlung in decays, case of low energies and high energies.
- **(7)** How to port τ results to high energy applications and to theoretical studies such as lattice QCD?

Inter-related topics cont.

- **(8)** Interfaces to high energy production generators.
- **(9)** Options/traps/complications specially for hypothetical processes of new physics require attention.
- **(10)** Construction of observables for use of taus and tau spin to constrain properties of hard interactions.
- **(11)** Discussion of systematic errors, QCD ME, PS LO NLO etc. QED FSR can be painful for spin observables as it may damage some kinematical properties present at Born level.
- **(12)** Weights for spin effects e.g. to study Higgs background separation, weights for electroweak or Z' effects.
- **(13)** Optimization of observables or their adaptation to realistic detection conditions (*To π^0 's or not to π^0 's that is the question*).
- **(14)** Broader theoretical contexts of our work

Shared competence paradigm.

- **(1)** We need to use quite dispersed competences
- **(2)** That is why talks are expected to be followed by longer discussions on possible use of known techniques or to stimulate development of the new ones.
- **(3)** I encourage questions. Also speakers can do that.
- **(4)** Afternoons are not supposed to be devoted to free time, but to build up links for later discussions or for starting new projects. That is also the reason we may try share evenings in old city (if we feel so).
- **(5)** In many cases we need to know first of all whom to ask and how to formulate the questions. On many occasions, I have profited enormously from *stupid questions* which turned out to be brilliant at the end.

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Figure 1: Daily dinner meeting point. Corner of main market joining St. Anna and Wislna Streets, 7 pm sharp.