Trip Report ICAP09

- **Critical Assessment of the organization of the conference**
- **Gossip at the conference**
- **Issues relevant for our group**
- **Selected Issues**

Critical Assessment of the organization of the conference

- **With the experience as a co-organizer of ICAP2006 I have some comments about the organization of such conferences.**
- **At our ICAP we have made quite some effort to revive the conference. In fact, we have been working with 4 CERN staff including a secretary and GSI contributed with 2 people. We did most of the local organization while GSI were responsible for the proceedings.**
- **Our goals were:**
  - **An excellent physics program attracting the best speakers in the field. Attractive opening, closing program and excursion.**
  - **Looking for an attractive place with Chamonix and Annecy as possible candidates.**
  - **An affordable conference fee covering all expenses and offering a variety of hotels from cheap to high class.**
  - **Well designed web page.**
  - **Optimal technical support and rapid proceedings and talks available at day one.**

ICAP2009 in Comparison

- I am not complaining that the ICAP2009 was a bad conference at all!
- However from a technical point of view it was not organized that well:
  - Despite a rather large conference fee it almost got the organizers in trouble financially due to the costs of a very prestigious conference hotel in SF.
  - There was no booklet, no conference bag, no banquet (finger food instead), seldom coffee, no excursion, a lousy web page, little technical support (MAC only and frequent inconsistencies with Windows presentations), very expensive Internet access. Presently only a few reports can be retrieved from the ICAP2009 web page.
  - In essence I think the organizers have underestimated the kind of work needed to look after all needs of such a conference.
  - The next one will be held in Rostock/Berlin Germany and we are still in discussions if we will go back to a 2y schedule.
- This having said the conference was interesting due to a reasonable good program
- The fact that key contributors like Etienne Forest did not show up might be a bad sign however…

Gossip of the conference

- Martin Berz gave a talk about rigorous bounds of chaos in accelerators. This has reminded me quite a lot of the rigorous bounds on DynamicAperture as presented by G Hoffstaetter many years ago. When Wolfram and myself applied this the case of the LHC we found results consistent with zero. Not surprising since in higher dimension chaotic motion exists in a continuous web down to small amplitudes. So I am skeptical!
- Anyway, the gossip concerned the second transparency of his talk on which he bitterly complained about being badly treated by a "certain" colleague in the audience ("squeezed lemon", wishing him death when he was very ill etc). The funny part was that this colleague was NOT in the audience actually and only 2 or 3 people understood!
- And the gossip continuous in the sense that Martin in 2006 made a huge fuss about us misusing his DA package. As a consequence I have spent many hours with CERN lawyers to prepare a deal with him. When we were ready he simply disappeared!
- Funny that in the meantime Etienne has added a new C++ DA package by Lingyung Yang to PTC and we can now use either. Unfortunately, Martin left before being informed of this fact…

Issues relevant for our group 1/2

- **I finally met Lingyung Yang that has generously contributed his C++ DA package to the MAD-X PTC project. He reminded me of the fact that this package is most effective for large number of parameters. This feature should be exploited in the future!**
- **I also met Michael Borland for the first time. He was kind enough to find a way that from now on we can distribute his SDDS libraries without any hassle. As a result the SDDS version of MAD-X will become the default. It was equally pleasant to hear from him that he will support me in case the trouble with non-standard SDDS will resurface (the notorious llong type!)**

Issues relevant for our group 2/2

- **Alexander Valishev from Fermilab gave a talk about BB at the LHC as a representative of LARP. In this talk he claimed that SixTrack does not have the 6D BB implemented (info from BNL)! I objected of course, but it is true that we have not yet benchmarked the 6D BB in SixTrack. We agreed on a collaboration starting with a visit to CERN in the near future. The issue is the benchmarking of the SixTrack formalism with other codes. It seems that our colleagues from BNL are just too busy with their own projects.**
- **The Tech-X company is opening an European branch in Zürich in the coming months. They expressed interest in helping us with GPU technology with SixTrack as a possible application. It seems presently premature to guarantee success, e.g. double precision seems to be a killer for the graphics cards. They have also showed interest to help with software design of large programs like MAD in case we want to go for a substantial redesign of the code. It all depends if they can tab into financial resources of Brussel's science administration.**

Selected Issues 1/2

- **Riccardo Bartolini has presented the successful compensation of sextupole resonances around the ring with a large number of individually powered sextupoles. It was shown that the simultaneous compensation of 2 resonances is required to recover the expected behavior from the model. Instead of using the pair amplitude/phase it seems advantageous to use the real/imaginary part of the resonance terms for optimal results in the resonance compensation.**
- **Johan Bengtsson gave a talk in which he urged the "closing of the loop" on the one hand between designers and magnet engineers and on the other hand between the accelerator physics, operation and equipment experts using PTC like accelerator analysis tools. This was meant for "low emittance light sources" but sounded pretty general. It seems this is what we are doing at CERN?**
- **I noticed a surprising interest even into detailed issues like the BV flag in MAD-X (Kabal SLAC).**

Selected Issues 2/2

- **Genetic algorithms from the `70 have been rediscovered and applied to accelerator lattice optimization of LBL ALS. This MOGA (Multi Objective Genetic Algorithm) technique seems to make sense when the space of optimal solutions are disjoint. It seems to me that one might use such a technique in cases where little is know about the behavior of the system. I therefore doubt in will have any impact for our machines. On the other hand one should not completely disregard those techniques…**
- **Equally confident where the COSY infinity people about "rigorous global optimization".**
- **"What Supercomputers Still Can't do" H. Simon, LBNL**
  - **In a computational sense Supercomputer will surpass the human brain in 2020**
  - **This may be completely flawed since the brain functions very differently**
  - **Kasparov cheated by Deep Blue?**
  - **Brain needs 20-30Watt**
  - **The 2020 supercomputer will need the equivalent of nuclear power plant ~1GWatt**