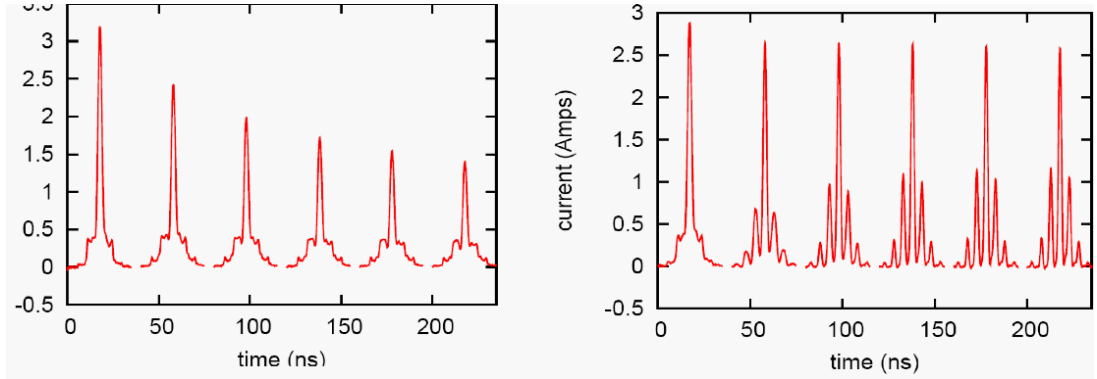
Highlights from COOL07

- COOLxx: Series (biennal) of workshops on "Beam Cooling and related Topics":
  - ~70 attendants
  - Topics:
    - electron cooling,
    - stochastic cooling,
    - ionization cooling, laser cooling
    - related topics, e.g. instabilities, cristallization
  - International:
    - 2005 in USA
    - 2007 in Bad Kreuznach (Germany) - organized by GSI
    - 2009 in Lanzhou (China)
  - Since "my" last workshop in 2003:
    - Not many fundamental new developments,
    - Some projects implemented, new projects proposed.

RHIC: bunched beam stochastic cooling

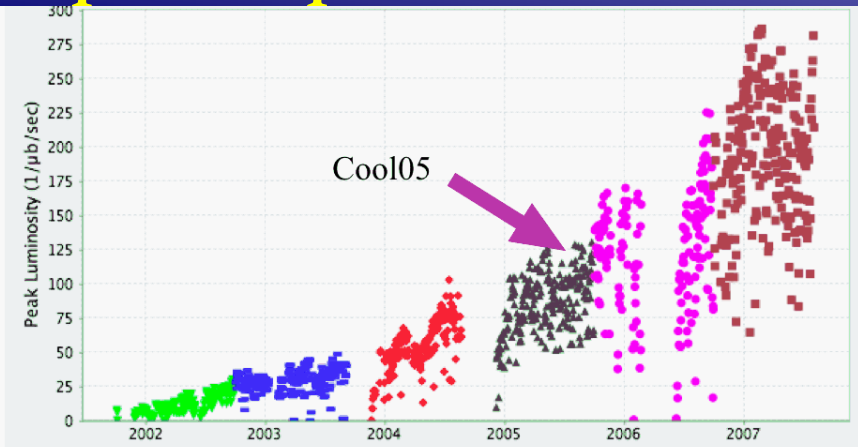
Beam intensities versus time

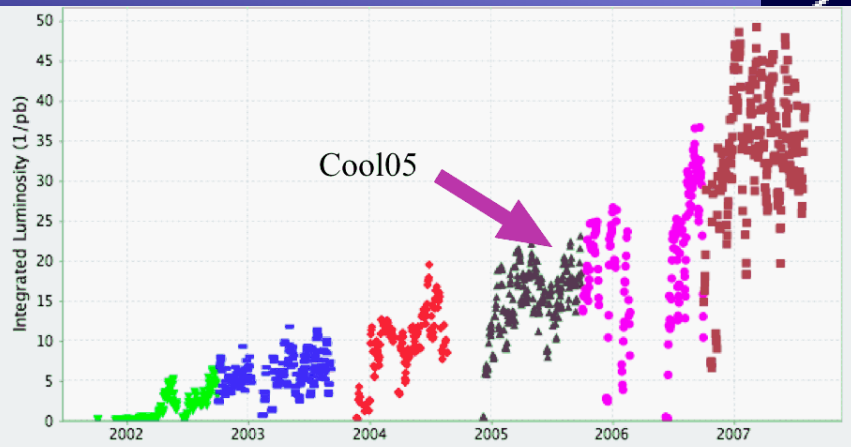


Evolution of the bunch shape without and with cooling

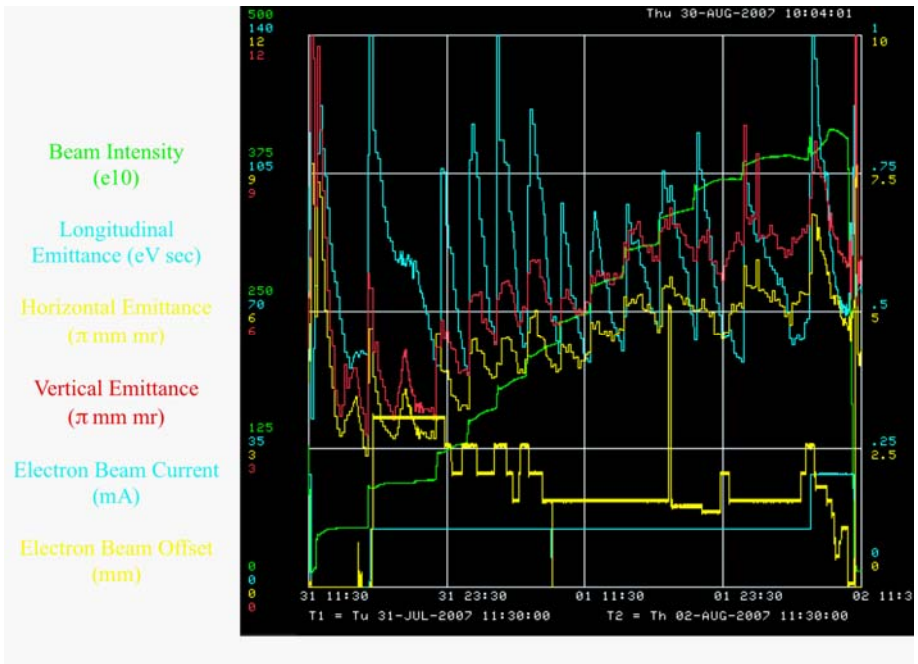
- Longitudinal cooling of Au in one ring operational (significant for performance)
  - Life-time at burn-off level
  - High Q cavities at a few lines needed
  - Fibre optic: signal quality an issue
- No anomaleous coherent Schottky signals - mis-interpretation in the past ??
- Plans for cooling in both rings in all three phase spaces:
  - Use of microwave link (for fast signal transmission)

FNAL: progress on cooling contributes to improved performance





- FNAL: improved performance partly due to progress on cooling
- Recycler:
  - initial intention: store "used" p-bars from Tevatron
  - now: p-bar accumulator improved stacking rate
  - Stochastic cooling
  - "high" energy electron cooling in operation (reduced life-time)
- Improvments in accumulator
- Talk on electron lens!!



FAIR and ELENA (& AD status)

- FAIR
  - Many inter-connected rings
  - Stochastic cooling at several rings: attempt to have optimized lattices (isochroneous from pick-up to kicker)
  - Electron cooling: from medium energy (similar to FNAL) to very low energy in electrostatic ring
  - Very confusing - barely impossible to keep an overview
- ELENA & AD status:
  - Proposal for a post-decelerator at the CERN-AD
  - Motivation:
    - AD decelerates p-bars from ~3.5GeV to 5MeV (magnetic field decreases by factor ~35)
    - For capture of the AD beam in traps: further deceleration by RFQ and foils -> scattering, blow-up and low capture efficiency
    - Further deceleration and electron cooling by a small ring down to 100 keV to gain two orders of magnitude in efficiency