

# E- source update

AS-TAGL Meeting April 01, 2009

- Brachmann -

# Ongoing cathode R&D

- Measurements of ion back-bombardment effects on QE decay are being taken and analyzed:
  - vs average beam current
  - vs laser size on cathode
  - vs laser wavelength
  - CW vs pulsed beam
- To apply new activation technique (Cs+Li) into GTF:
  - Expected to improve QE lifetime
- Study gradient doping in cathode structure and gradient doping in the active layer:
  - Expected to improve both QE and polarization

# JLab DC-Gun work update (M. Poelker)

- 1) JLab wants a 200kV gun to help with parity violation experiments, to help push beam through apertures by reducing space charge problems.
  - So the gun R&D is mutually beneficial... (with ILC)
- 2) new inverted gun, should have this gun under vacuum soon, hopefully running beam by June.
- 3) field emission test stand version 1. Diamond paste polished stainless not bad, but it would be great to find alternative, i.e., something with less field emission out to 10MV/m.
- 4) field emission test of single-crystal niobium electrode, quiet to 150kV, and operated up to 215kV.
- 5) Student's modeling results, indicating fairly good agreement between measured data and parmela simulation –
  - Goal: "perfect" ILC electrode geometry that transmits \*all\* beam away from gun, with uniform emittance across photocathode face using a ~ 1cm drive laser beam.....

# Source Laser R&D

- Work on Amplifier Pump laser
  - Measurements of cavity performance
- Most likely outcome:
  - 1) Needs at least re-engineering and replacement of critical components
  - 2) total replacement of pump laser maybe required
  - If M&S is considered only, option 2) is the more costly alternative (k\$ 250) but maybe desirable to meet current milestones
- Emerging plans to work on CLIC source laser system using SLAC's equipment
  - Minor modification of existing laser system at SLAC
  - Informal agreement with L. Rinolfi