# 9-cell Cavity Coordination

highest priority

- Objective: Identify and prepare 8 cavities + backups for dressing for CM2 (and beyond)
  - Favor cavities which have gradient performance >31.5 MV/m in vertical test without substantial field emission
- Timescale
  - CM2: dressed cavities March 2010
  - Reminder: after a bare cavity is qualified, need
    - A minimum of 2 weeks for dressing, and
    - 1 month if horizontally testing
- Prioritization: To get as many qualified cavities as quickly as possible,
  - Prioritize first in terms of fastest preparation, then
  - Take lowest risk cavities first
  - In case of poor performance, put cavity aside (aka R&D path) and start with the next one; address R&D cavities as time permits

- Other high priority: Qualify FNAL/ANL processing facility for 9-cell cavities – facility not yet proven for CM cavity preparation
- Other high priority: S0 production yield data accumulation - compatible so far only with JLab effort
- Other high priority: R&D topics
- Other high priority: New vendor development

# 9-cell Production Cavity Status

- AES004 and TB9ACC011 went to KEK for S1G
- 8 cavities plus backups needed for CM2 [and then more cavities, more CM's…]
  - Dressed cavities
    - TB9ACC013 [in HTS], TB9AES009, ACCEL8
  - Being-dressed cavities
    - TB9AES008, TB9AES010
  - Ready for dressing
    - TB9ACC016
  - Potential backup cavities which, although not fully qualified, are essentially useable now [>31.5 MV/m but significant FE]
    - ACCEL7 [35 MV/m (quench/FE)], AES003 [34 MV/m (FE)], ACCEL6 [32 MV/m (quench/FE)]
  - In process/test cycle with unknown performance – split between JLab & FNAL
    - TB9AES007 [~1 week remaining], TB9RI026, TB9RI024, TB9RI018 [few weeks remaining]
  - 8 FNAL-received new cavities to be processed/tested (RI)
  - 12 more cavities will arrive at FNAL at least one month from now (AES&Niowave-Roark)

# 9-cell R&D activity

- NB: As a rule, we don't do fundamental R&D on 9-cells, only confirmation of 1-cell research findings and R&D associated specifically with 9-cell fabrication

- EP qualification at FNAL/ANL facility
  - ACCEL6 [light EP, moderate performance], ACCEL7 [light+ EP; moderate performance], TB9ACC017 [full EP, poor performance]
  - TB9RI026 [production cavity, bulk EP completed] – few weeks to know performance
  - TB9RI024 [production cavity, planned for light EP] – few weeks to know performance
  - 5 others bulk EP'd at RI to arrive regularly for light EP within the next few months
- VEP qualification at Cornell (partially correlated with pits/bumps and tumbling)
  - ACCEL9, TB9AES005, TB9ACC010, TB9ACC015, plus 2 new ones
- Fixing broken cavities – to return to production path
  - TB9ACC014, TB9ACC012, JLAB-1
- Pits and bumps studies, instrumentation development, etc. at FNAL
  - TB9ACC017, JLAB-2
- Dressed cavity R&D, e.g., dressed EP or BCP
  - AES002 [20 MV/m (quench)], AES001 [22 MV/m (quench/FE)]
- New vendor development
  - 6 Niowave-Roark cavities to arrive in next 6 months

# Summary

- Of the eight cavities (plus backups!) for CM2
  - We have 1 in HTS
  - We have 2 dressed and ready (to be HTS tested before CM assembly)
  - We have 3 which will probably become dressed and ready in the next few weeks
  - We have 3 backup cavities which may be useable now
  - We have 4 in process/test with unknown performance
- The R&D program is very busy and split among several important targets at the Americas Labs
- There is (still) more demand for cavities than availability