

*SRF Linear Accelerator Design  
an RF Perspective*

*WG 1 Summary  
Project X Collaboration Meeting  
September 9, 2010*

# *Choice of RF Power Sources*

- *IOT's Klystrons Solid-State  
Good choices in quantity*
- *Argonne concerned about sources for 1 MWatt  
at 352 MHz have started Solid-State Power  
source Replacement*

# *SNS Cavities*

- *HOMs causing problems and being removed.*
- *Piezo tuners are failing and being removed.*
- *Installed RF power overhead allows continued operation.*

# *SRF Cavities in General*

- *All systems behave differently even when adjacent in the same cryo module.*
- *Apply a wide error bar in the simulations for the accelerating systems. Include missing cavities or even cryomodules.*

# *Resonance Control*

- *Narrow band High Q cavities require active feedback. What happens when the tuner fails?*
- *Consider lower Q conservative design.*
- *More RF power required?  
Need real estate and infrastructure upfront to accommodate.*

# *Microphonics*

- *Helium bath pressure main perturbation.*
- *Stiffer cavities for lower  $dF/dP$ .*
- *Better LHe pressure regulation.*
- *Consider strongly the need for active cavity regulation.  
Needs additional RF Power.*

# *Energy Measurement*

- *Phase Scans depend on good knowledge of energy.*
- *How measured in the Linac?*
- *Will dispersive sections be required?*

# *Lessons Learned From Other Labs*

- *Several Labs have operating SRF systems.*
- *Take serious note of their performance issues.*
- *Before releasing CDR, significant internal review*