Spear Multibunch Instability Status

- 30 year old ring (designed before importance of impedance was understood)
- Now fully dedicated to SR production
- 3 GeV
- Two 5cell-RF cavities: 358.533Mhz (1 powered + 1 parked)

h=280; f_o= 1.28 MHz; 2 movable tuners (in extreme cells)

Water cooling but No temperature regulation

Two klystrons

No circulator

- Filling pattern 100mA

(1 single bunch 5mA + 95 mA in 50 bunches over ¾ of ring)

Spear Multibunch Instability Status

- Longitudinal coupled bunch instabilities
- Proper choice of RF voltage in active cavity to avoid harmful resonances
- Campaign of characterizations to park idle cavity:

  Forest of lines in the 1GHz range but no more than 150 kΩ

  1 M Ω impedance @ 500 MHz far away from working point

Stable during operation (up to 100 mA SPEAR current limit)

No beam based feedback

- Transverse coupled bunch instabilities

Had resonances caused by Waveguide coupling to cavity

Now avoided by regulating the Waveguide pressure