

# 8<sup>th</sup> ICFA Beam Dynamics Mini-Workshop on Two-Stream Instabilities in Particle Accelerators and Storage Rings

Hotel Loretto, Santa Fe, NM February 16-18, 2000

6:00-8:00 PM, February 15 – Registration and Reception (Hotel Lobby)

## Wednesday, February 16

8:00 - 8:07 AM Announcements [7minutes] Robert Macek/Katherine Harkay

8:07- 8:15 Welcome and Introductory Remarks [8min] Geoff Greene (LANL)

### I. Electron Cloud Effects and Two-Stream Instabilities at High Intensity, Medium Energy

#### Proton Rings - chair: Robert Kustom (ANL)

8:15 - 8:50 Review of the e-p Instability at ISR [25+10min discussion] Bruno Zotter (CERN)

8:50 - 9:30 Overview of Recent Developments in the PSR Instability [40] Robert Macek (LANL)

9:30 - 10:00 Electron Measurements at PSR [30] Andrew Browman (LANL)

10:00 - 10:20 Discussion of the two previous PSR talks [20]

10:20 - 10:35 Break [15]

10:35 - 10:55 Wide Band BPM Measurements of Unstable PSR Beam [15+5] A. Alexandrov (ORNL)

10:55 - 11:35 Estimating e-p Thresholds [30+10] Mike Blaskiewicz (BNL)

11:35 - 12:15 Vlasov-Maxwell Description of Electron-Proton Two-Stream Instability [30+10] Ron Davidson (PPPL)

12:15 - 1:15 PM Lunch [60]

1:15 - 1:50 Nonlinear Perturbative Particle Simulations of Two-Stream Instabilities in High-Intensity Proton Beams [25+10] Hong Qin (PPPL)

1:50 - 2:25 Simulations of the PSR Instability [25+10] Tai-Sen Wang (LANL)

2:25 - 3:00 Some Features of Transverse Instabilities in Small Scale Storage Rings [25+10] Vadim Dudnikov (FNAL)

3:00 - 3:20 Break [20]

## Wednesday, February 16, continued

### II. Electron Cloud Effects and Two-Stream Instabilities at Electron, Positron Rings and Photon Sources – chair: Miguel Furman (LBNL)

3:20 - 4:00	Perspective on Electron Cloud Effects [30+10]	Katherine Harkay (ANL)
4:00 - 4:35	Experiment on Photoelectron Instability at BEPC and KEKB [25+10]	Hitoshi Fukuma (KEK)
4:35 - 5:10	Observation of the Beam Induced Multipactoring at PEP-II [25+10]	Sam Heifets (SLAC)
5:10 - 5:25	Electron Detectors for Diagnostics of Electron Cloud Effects [15]	Richard Rosenberg (ANL)
5:25 - 5:40	Electron Cloud Effects at APS [15]	Katherine Harkay (ANL)
5:40 - 5:50	Discussion of two previous talks [10]	

## Thursday, February 17

### Session II continued, chair: Miguel Furman

8:00 - 8:35	Fast Beam Ion Instability: Simulations and Results from the ALS [25+10]	Tor Raubenheimer (SLAC)
8:35 – 9:00	Effect of Tune Spread on Fast Ion Instability [20+5]	Gennady Stupakov (SLAC)
9:00 - 9:35	Observations of the Fast Ion Instability at PAL/KEKB [25+10]	Jung Yun Huang (PAL)
9:35 - 10:15	Beam-Ion Oscillations at Bates [30+10]	Chris Tschalaer (Bates)
10:15 - 10:30	Break [15]	

### III. Secondary Emission, Surface Effects and Coatings – chair: Oswald Grobner (CERN)

10:30 - 11:30	Secondary Electron Emission Yields From Accelerator Materials [45+15]	Robert Kirby (SLAC)
11:30 - 11:50	Surface Conditioning of Accelerator Components: Secondary Electron Yield and Chemical Analysis [15+5]	Richard Rosenberg (ANL)
11:50 – 12:15	Study of Surface Characteristics Determining the Electron Cloud Growth [20+5]	Noel Hilleret (CERN)
12:15 - 1:15 PM	Lunch [60]	
1:15 – 1:35	Discussion of 3 previous talks on secondary emission [20]	
1:35 - 1:55	Beam Scraping Effect in SE Production [15+5]	S.Y. Zhang (BNL)
1:55 - 2:15	TiN coatings by RF Enhanced Sputtering [15+5]	Ka-Ngo Leung (LBNL)

### IV. Electron Cloud Effects and Two-Stream Instabilities at High Energy Proton Rings – chair: Miguel Furman (LBNL)

2:15 - 2:55	Observations of the Electron Cloud Effects at the CERN SPS [30+10]	Gianluigi Arduini (CERN)
2:55 - 3:35	Simulations for LHC and SPS [30+10]	Frank Zimmermann (CERN)
3:35 - 3:55	Break [20]	
3:55 - 4:30	Implications of the Electron Cloud Effect on the Design of the LHC Vacuum System [25+10]	Oswald Gröbner (CERN)
4:30 – 5:00	Laboratory System to Simulate Bunch Induced Multipacting [20+10]	Mauro Pivi (CERN)
5:00 – 5:15	Short Summary of the Electron Cloud Session of the recent Chamonix Workshop [10+5]	Frank Zimmermann

**6:15 PM Cocktails**

**6:45 PM Banquet at Hotel Loretto**

## Friday, February 18

### V. Panel Discussion on Future Directions and Workshop Recommendations

**chair: Fred Mills (FNAL) [100 min]**

- 8:00 - 9:40 Panel: Robert Kustom, Miguel Furman, Oswald Grobner, Katherine Harkay,  
Robert Macek, Hitoshi Fukuma, Robert Kirby, Ron Davidson, Frank Zimmerman
- 9:40 - 10:00 Break [20]

### VI. Workshop Summary Session (Summaries of Workshop Sessions)

**chair: Katherine Harkay (ANL)**

- 10:00 -10:35 Electron Cloud Effects and Two-Stream Instabilities at  
High Intensity, Medium Energy Proton Rings [35] Robert Kustom
- 10:35 -11:05 Electron Cloud Effects and Two-Stream Instabilities at  
Electron, Positron Rings and Photon Sources [30] Miguel Furman
- 11:05 - 11:35 Secondary Emission, Surface Effects and Coatings [30] Oswald Grobner
- 11:35 - 12:05 Electron Cloud Effects and Two-Stream Instabilities  
at High Energy Proton Rings [30] Miguel Furman
- 12:05 - 12:10 Closing Remarks and Announcements [5] Robert Macek

**12:15 - 1:15 Lunch**