

Geneva, December 18, 2001

Mini-Workshop on Electron-Cloud Simulations for Proton and Positron Beams at CERN, Geneva, April 15-18, 2002

<http://wwwslap.cern.ch/collective/ecloud02>

Second Announcement and Preliminary Programme:

The mini-workshop on 'Electron-Cloud Simulations for Proton and Positron Beams' will review the present analytical, simulation and modelling approaches to the electron-cloud problem, confront them with beam observations, and provide a direction for future studies. The emphasis of the workshop is on simulation recipes and physics content.

The preliminary programme of the E-CLOUD'02 workshop is attached to this announcement. A few talks, mostly concerning beam observations and laboratory measurements, have been invited in order to ensure adequate background information, and to motivate the electron-cloud studies. The observations also give practical benchmarks and show which results the simulations should deliver and/or against which they can be calibrated. All other talks, in particular those related to simulation studies - i.e., the core of the workshop - will be contributed presentations without special invitation. We expect that we can accommodate talks with an average length of 15-20 minutes, depending on the number of abstracts we receive, and the length of discussions.

Abstracts, related to electron-cloud observations, modelling or simulations, should be submitted preferably via the E-CLOUD'02 WWW page, or by email to Giovanni Rumolo (giovanni.rumolo@cern.ch) or Frank Zimmermann (frank.zimmermann@cern.ch). The deadline for the receipt of *abstracts* is **January 31, 2002**.

There will be no registration fee. CERN will publish the proceedings. In addition, we strongly recommend submission of the workshop contributions to Physical Review Special Topics – Accelerators and Beams, to be published in a special edition.

A workshop banquet will be organized on a voluntary basis. A block of rooms has been reserved for workshop participants at the **CERN hostel** in Meyrin close to the workshop site **until January 31**. We encourage participants to make reservations via the web site <http://cern.web.cern.ch/CERN/housing/hotel/Hostel.html> , mentioning the E-CLOUD'02 workshop, and to inform the workshop organizers.

Although the workshop is free of charge, participants should register, either on Sunday evening, between 18:30 and 20:00, or else on Monday morning, 8:00 to 8:30. After the Sunday registration, we are organizing a self-financed dinner in an Italian restaurant.

We are looking forward to seeing you at E-CLOUD'02.

Giovanni Rumolo, Francesco Ruggiero, Juliette Thomashausen, Frank Zimmermann

Tentative Programme (Monday, April 15 – Thursday, April 18, 2002)

<p>Monday morning 15.04.</p>	<p><i>Experimental Observations at Existing Accelerators and Concerns for Future Machines</i> Chair: Robert Macek, LANL</p>	<p>Discuss experimental evidence, effects of electron clouds and countermeasures at existing positron or proton rings, such as KEKB, PEP-II, SPS, and concerns for future machines, e.g., LHC, LC damping rings, and high-intensity proton rings. Effects of various magnetic fields, surface scrubbing, and dedicated diagnostics.</p> <p><i>Invited Talks:</i> 'Observations at KEKB' (H. Fukuma, KEK) 'Observations at PEP-II' (?) 'Observations at the SPS - I' (K. Cornelis, CERN) 'Observations at the SPS - II' (J.M. Jimenez, CERN) 'High-Intensity Proton Machines' (J. Wei, BNL) 'LHC and LC Damping Rings' (F. Zimmermann, CERN)</p>
<p>Monday afternoon 15.04</p>	<p><i>Further Observations, Laboratory Measurements, and Modelling</i> Chair: Oswald Grobner, CERN</p>	<p>Experimental observations at other machines or details not covered in the morning talks. Laboratory measurements on secondary emission, photoemission, angular and energy distributions of electrons emitted from the surface. Physics ingredients in the simulations, e.g., space charge, boundary conditions, field representations, time steps.</p> <p><i>Invited Talk:</i> 'Review of Surface Properties' (N. Hilleret, CERN)</p>
<p>Tuesday morning 16.04.</p>	<p><i>Simulations of Electron-Cloud Build Up</i> Chair: Miguel Furman, LBNL</p>	<p>Results for various machines, incl. build up time, decay time, minimum clearing gap, electron densities, dependencies on parameters and on simulation ingredients. If applicable comparison with observations. Simulated impact on beam diagnostics. Properties (energy and angular spectra, spatial distribution) of electrons incident on the wall. Predictions for other future machines. LHC heat load.</p>
<p>Tuesday afternoon 16.04.</p>	<p><i>Simulations of Electron-Cloud Instabilities</i> Chair: Tor Raubenheimer, SLAC</p>	<p>Single and multibunch instabilities. Short-range and long-range wake fields. Simulated and analytically computed instability thresholds and growth rates. Effects of chromaticity and octupoles. Interplay with regular impedance, space charge, and beam-beam. Longitudinal wake fields. Applicability of the wake field concept to the electron cloud, including potential problems, and approaches to resolve them. Comparison with observations.</p>

<p>Wednesday morning 17.04.</p>	<p><i>Specific Comparisons and Plasma Approaches</i> Chair: Tom Katsouleas, USC</p>	<p>Comparison of simulation results with each other and with machine observations. Plasma considerations. Excitation of collective modes in the electron cloud? Possibility of a 'magnetron effect'? Results of plasma simulation codes. Dielectric constant and absorption of synchrotron light. Interaction with local impedance sources.</p>
<p>Wednesday afternoon 17.04.</p>	<p><i>Discussions of Future Studies, Collaborations, and Possible Solutions</i> Chair: Weiren Chou, FNAL</p>	<p>Discuss approaches to suppressing or avoiding the electron cloud problem, e.g., magnetic fields, surface treatments, fast feedback, clearing electrodes, new ideas... and evaluate their efficiency. Compile a list of important open questions to be addressed. Develop a program for future R&D and establish collaborations and plans for experiments on existing machines.</p> <p><i>Invited Talk:</i> 'Possible Cures to the e-Cloud Problem' (R. Macek, LANL)</p>
<p>Thursday morning 18.04.</p>	<p><i>Summary Talks</i> Chair: Steve Myers, CERN</p>	<p>Summary Talks by the Session Chairmen</p>