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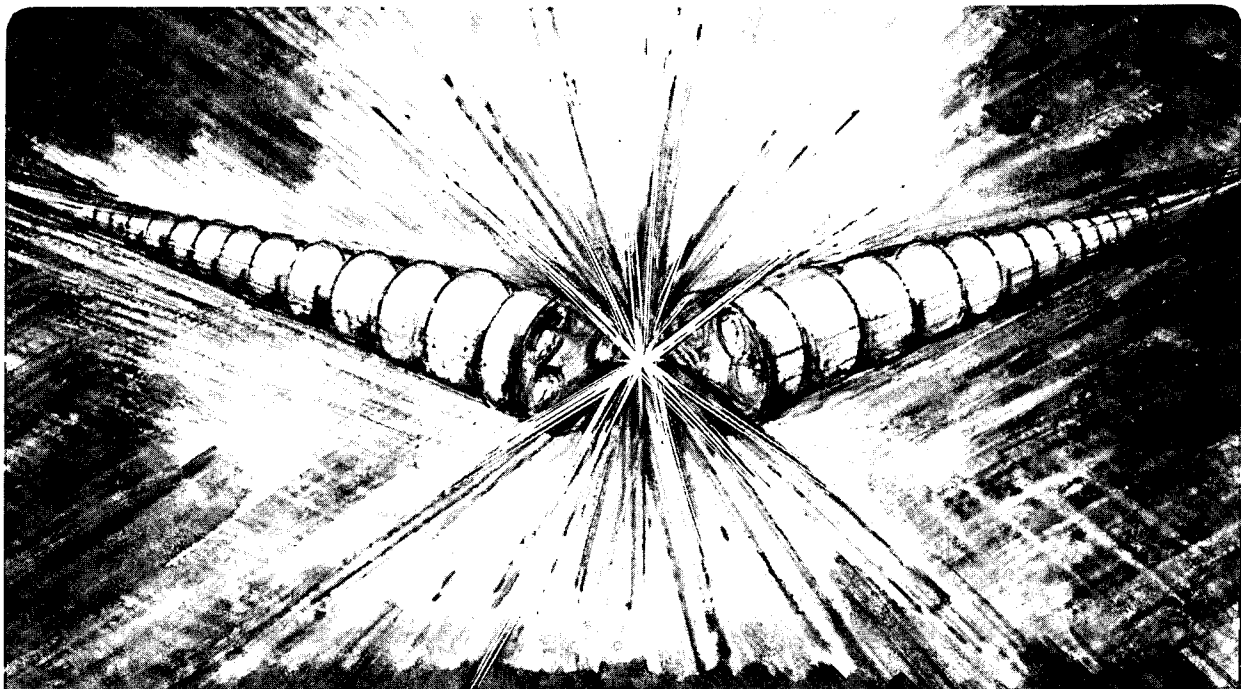
Accelerator & Fusion Research Division

Presented at the Sixth Advanced ICF Beam Dynamics Workshop,
Funchal, Madeira, Portugal, October 24-30, 1993, and to be
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News from LBL

M.A. Furman

January 1994



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NEWS FROM LBL*

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January 26, 1994

ABSTRACT

We present a brief summary of recent news from LBL related to accelerator physics. This talk was given on October 29, 1993 at the 6th Advanced ICFA Beam Dynamics Workshop on the subject "Synchro-Betatron Resonances," held in Funchal (Madeira, Portugal), October 24-30, 1993.

Advanced Light Source (ALS). There was an official dedication ceremony a week ago today, which was timed to coincide with a User's Organization meeting at LBL. There were several dignitaries present, as well as local news and television teams. The maximum current thus far achieved is ~ 400 mA, which is substantially larger than what is needed at present. There is one experiment running, with an insertion device in place, and first light was produced a few weeks ago.

Bevalac. After many years of distinguished research and valuable medical applications, the Bevatron and its heavy-ion injector, the HILAC, were shut down and decommissioned during these past few months, following a decision by the DOE to terminate operations. A program on the development of exotic ion sources will remain in place.

PEP-II Project. This B factory project is a collaboration between SLAC, LBL and LLNL. Secretary of Energy O'Leary recently chose the SLAC/LBL/LLNL PEP-II proposal over its rival CESR-B from Cornell University. The decision was announced last week by President Clinton in a televised speech, thus providing PEP-II with the official support of the U.S. Government. The proposal now goes to Congress for the appropriation process.

Center for Beam Physics (CBP). The function of the CBP, formerly known as the Exploratory Studies Group, is to perform theoretical and experimental research at the frontier of the

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physics of/with charged particle and photon beams, as well as to provide theoretical and applied accelerator physics support for projects at LBL and elsewhere. Present activities include:

- Beam dynamics studies for the ALS and PEP-II (tracking, beam-beam analysis, instabilities, RF cavity and feedback kicker design).
- Plasma lens and 90° Thomson scattering experiments for femtosecond pulse generation. These experiments will be carried out at the Beam Test Facility of the CBP, now under construction; its primary tool is the 50 MeV ALS injection linac.
- Studies of free electron laser dynamics at Stanford, and optics at the CBP Laser Optics Laboratory.
- Bunched beam stochastic cooling studies for RHIC.
- Development of exotic microwave structures at the CBP Lambertson Beam Electrodynamics Laboratory.
- Investigation of new acceleration methods and devices such as the two-beam accelerator.

Superconducting Magnets. Design of 5-cm aperture superconducting dipole magnets, and design and fabrication of quadrupole magnets for the SSC.

Fusion Energy Research. Developments are proceeding on pulsed high-current heavy ion beams for inertial fusion. Research on magnetic fusion goes on in parallel.

RFQ Structures. Design of very low frequency RFQ to accelerate high isospin low-charge ions. The RFQ has to operate CW at room temperature, and is meant to serve as a preaccelerator for an eventual radioactive beamfacility for nuclear physics.

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