

Lawrence Berkeley National Laboratory

Recent Work

Title

Automatic Bead-Positioning System for Measuring Impedances of R-F Cavity Modes

Permalink

<https://escholarship.org/uc/item/29w1g2f0>

Authors

Goldberg, D.A.
Rimmer, R.A.

Publication Date

1992-12-01

Abstract Submitted
1993 Particle Accelerator Conference
May 17-20, 1993

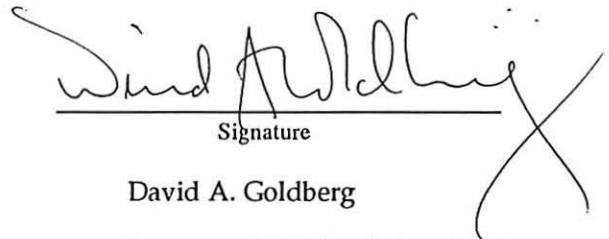
Suggested title of session in which paper should be placed:

2.3.2 Room-Temperature R-F Structures (If at all possible, please place in the same session as, and physically adjacent to, the paper **Measurements of Higher-Order Mode Damping in the PEP-II Low-Power Test Cavity**, by R.A. Rimmer and D.A. Goldberg)

Automated Bead-Positioning System For Measuring Impedances of R-F Cavity Modes* D.A. GOLDBERG and R.A. RIMMER, *Lawrence Berkeley Laboratory, Berkeley, CA 94720*--We describe a fully automated bead puller system which uses stepping motors to position the bead, and an HP-8510 network analyzer to measure the resulting frequency shifts, both devices being under computer control. Longitudinal motion of the bead is used for measurement of cavity shunt impedance. In addition, azimuthal scans at fixed longitudinal position aid in determining the multipole character of higher-order modes. High sensitivity/accuracy is made possible by measuring phase shifts at the unperturbed resonant frequencies (rather than frequency shifts themselves), thereby permitting averaging factors of > 500 with only modest increases in data acquisition time. Sample measurements will be presented. A comprehensive analysis of the experimental results is presented in an accompanying paper.¹

* Work supported by Director of Office of Energy Research, U.S.D.O.E, under Contract DE-AC03-76SF00098

¹ R.A. Rimmer and D.A. Goldberg, "Measurements of Higher-Order Mode Damping in the PEP-II Low-Power Test Cavity," at this conference.



Signature

David A. Goldberg

Lawrence Berkeley Laboratory
MS - 47/112
Berkeley, CA 94720

Phone: (510) 486-7222
FAX: (510) 486-7981
e-mail: dag@lbl.gov
dag@lbl.bitnet

- Prefer Poster Session
 Prefer Standard Session
 No preference