

Trapped Ions and Laser Cooling III

Selected publications of the Ion Storage Group of the Time and Frequency Division

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PREFACE

This collection of papers represents the work of the Ion Storage Group, Time and Frequency Division, National Institute of Standards and Technology from October 1988 to February 1992. It follows the collections of papers contained in NBS Technical Note 1086, *Trapped Ions and Laser Cooling* (June 1985) and NIST Technical Note 1324 *Trapped Ions and Laser Cooling II* (September 1988). Although the primary goal of this work has been the development of techniques necessary for achieving high resolution spectroscopy, we have also been able to investigate related areas of research.

Papers listed on page vii were published or prepared during the period October 1988 to February 1992 but are not included here. They can be obtained on request. We intend to update this publication periodically to include new work. We hope this collection of papers will be useful to our colleagues in this and related fields.

We acknowledge the important contributions of several colleagues to this collection. In particular, we thank Larry Brewer, Claude Cohen-Tannoudji, Jean Dalibard, Frank Diedrich, Frank Elsner, Sarah Gilbert, Jon Gilligan, Dan Heinzen, Dan Larson, Chuck Manney, Fred Moore, Mark Raizen, and Carl Weimer. We gratefully acknowledge the continued support of the U. S. Office of Naval Research and the support of the Air Force Office of Scientific Research through September 1991.

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4. "Rotational Equilibria and Low-Order Modes of a Non-Neutral Ion Plasma," D. J. Heinzen, J. J. Bollinger, F. L. Moore, W. M. Itano, and D. J. Wineland, Phys. Rev. Lett. 66, 2080 (1991). TN-162

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2. "Recent Experiments on Trapped Ions at the National Institute of Standards and Technology," D. J. Wineland, J. C. Bergquist, J. J. Bollinger, W. M. Itano, F. L. Moore, J. M. Gilligan, M. G. Raizen, D. J. Heinzen, C. S. Weimer, and C. H. Manney, Proc. Enrico Fermi Summer School on "Laser Manipulation of Atoms and Ions," July 1991, Varenna, Italy, submitted September, 1991. TN-182

ADDITIONAL PUBLICATIONS

Reports published or prepared during the period October 1988 to February 1992, but not included in this technical note.

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12. "Laser Cooling of Trapped Ions," W. M. Itano, J. C. Bergquist, J. J. Bollinger, and D. J. Wineland, *ibid.*
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15. "Single Ion Spectroscopy," J. C. Bergquist, D. J. Wineland, W. M. Itano, F. Diedrich, M. G. Raizen, and F. Elsner, Proc. Soc. Photo-optical Instrumentation Engineers, to be published.
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