

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Measurements of Dynamic Polarizabilities for Five Metal Atoms using Electrically Exploding Wires in Vacuum and Novel Integrated-Phase Technique**<sup>1</sup> GENNADY SARKISOV, Ktech Corp., Albuquerque, NM, IZRAEL BEIGMAN, VIATCHESLAV SHEVELKO, P.N. Lebedev Physics Institute, Moscow, Russia, KEN STRUVE, Sandia National Laboratories, Albuquerque, NM, USA — Accurate measurements within 10% accuracy of the dipole dynamic polarizabilities for five non-refractory metal atoms Mg, Ag, Al, Cu and Au at laser wavelength 532nm and 1064nm are presented using electrical explosion of thin wires in vacuum and novel laser probing integrated-phase technique. The new technique is based on a single-wavelength interferometry and does not require an axial symmetry of the tested object. Theoretical prediction of dynamic polarizability for wavelengths 355, 532 and 1064 nm, as well as the static dipole polarizabilities, are also presented. An agreement within 20% was obtained between calculated data, recommended static polarizabilities, and dynamic polarizabilities at 532nm and 1064nm, measured in the present work.

<sup>1</sup>Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the U. S. Department of Energys National Nuclear Security Administration under contract No. DE-AC04-94-AL85000.

Gennady Sarkisov  
Ktech Corp., Albuquerque, NM

Date submitted: 06 Jul 2005

Electronic form version 1.4