

Thursday, March 13, 2008
LUNAR GEOPHYSICS
8:30 a.m. Marina Plaza Ballroom

Chairs: J. S. Halekas
M. A. Wieczorek

- 8:30 a.m. Lognonne P. * Lefeuvre M. Johnson C. L.
Constraints on the NEO Impact Frequency from Analysis and Modeling of Apollo Impact Events [#1416]
 The lunar impact frequency is analysed from events recorded by the Apollo seismometers. Models of Ivanov et al. [2003] or Ortiz et al. [2006] provide a better match with the lunar seismic observations than those of Brown et al. [2002].
- 8:45 a.m. Wieczorek M. A. * Cahill J. T. S. Lucey P. G. Shearer C. K.
The Mantle of the Moon: Exposed and Sampled? [#1271]
 Central peaks of complex craters and olivine clasts in the lunar sample collection have been identified that might be derived from the Moon's upper mantle.
- 9:00 a.m. Cooper B. L. *
Apollo 17 Lunar Sounder Data Provide Insight into Aitken Crater's Subsurface Structure [#2369]
 Aitken crater has altered the expression of a transecting subsurface magnetic anomaly, thus the anomaly is pre-Upper Imbrian. This pilot study shows how the Apollo radar data can be integrated with other data sets for studies of the lunar far side.
- 9:15 a.m. Cahill J. T. S. * Wieczorek M. A. Lucey P. G. Shearer C. K.
Radiative Transfer Modeling of Geophysically Targeted Lunar Impact Crater Central Peaks [#1398]
 We use a geophysical model to constrain impact crater material depths of origin. This allows us to use a quantitative spectral analysis model to do a compositional survey of crater peaks that potentially excavated lower crust or mantle material.
- 9:30 a.m. Garrick-Bethell I. * Weiss B. P.
Early Lunar Magnetic Fields Recorded by a Pristine Troctolite [#2521]
 We find evidence for a stable remanent magnetization in a ~4.2 billion year old troctolite. Cooling rate considerations suggest the sample may have recorded a magnetic field generated by a dynamo.
- 9:45 a.m. Lawrence K. P. * Johnson C. L.
Lunar Paleointensity Measurements Using Both Thermal and Microwave Methods [#1381]
 We present new thermal and microwave paleointensity experiments on five lunar samples, spanning 3.3–3.9 Ga. We also reevaluate published lunar paleointensities; no measurements pass all criteria for verifiable interpretation of primary TRM.
- 10:00 a.m. Fuller M. * Halekas J. S.
The Role of Impact Related Shock in Lunar Magnetism [#1430]
 Lunar magnetism remains an enigma, but new techniques and interpretations are modifying earlier pictures. In particular, recent work has suggested that the effect of impact related shock on the lunar paleomagnetic record may have been even greater than considered earlier.
- 10:15 a.m. Purucker M. E. * Head J. W. III Halekas J. S.
Magnetic Signatures of Lunar Multi-Ringed Impact Basins: New Constraints on the Timing of the Putative Lunar Dynamo [#1655]
 Two new, and independent, magnetic maps of the Moon provide an assessment of ambient magnetic fields during basin development. Both suggest a magnetic era, and a possible dynamo, in Nectarian, but not Imbrian times.

- 10:30 a.m. Abbas M. M. * Tankosic D. Spann J. F. LeClair A. Dube M. J. Gaskin J. A.
Lunar Dust Charging by Secondary Electron Emission and its Complex Role in the Lunar Environment [#1153]
First measurements of the charging of Apollo 11 and 17 individual dust grains by electron impact are presented. Charging by secondary electron emissions is found to be a surprisingly complex and contrary to data in the literature.
- 10:45 a.m. Halekas J. S. * Delory G. T. Stubbs T. J. Farrell W. M. Lin R. P.
Lunar Surface Charging: Magnitude and Implications as a Function of Space and Time [#1365]
We present new and improved measurements of lunar surface charging and its dependence on external drivers, and implications for fundamental plasma processes, regolith properties and exploration.
- 11:00 a.m. Kawamura T. * Saito Y. Tanaka S. Horai K. Hagermann A.
Re-Analysis of HFT Data Using the Apollo Lunar Surface Gravimeter Data [#2069]
We tried to redetermine seismic sources of moonquakes called High Frequency Teleseismic (HFT) on the Moon with unanalyzed data of the Apollo Lunar Surface Gravimeter. A new possibility of shallow hypocenter near the lunar surface was suggested.
- 11:15 a.m. Bills B. G. * Bulow R. Johnson C. L.
Influence of Earth-Moon Orbit Geometry on Deep Moonquake Occurrence Times [#1735]
We present a new model for the times of deep focus moonquakes. This model assumes that, for each deep moonquake cluster, there is a unique linear combination of orbital parameters that is favorable for moonquake occurrence.
- 11:30 a.m. Rambaux N. * Williams J. G. Boggs D. H.
A Dynamically Active Moon — Lunar Free Librations and Excitation Mechanisms [#1769]
The LLR observations constrain very well the lunar rotational motion and we determine the presence of the free modes. These modes can be excited by dynamical and geophysical mechanisms, for example, a fluid core.