

Abstract Submitted
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Accelerator Mass Spectrometry Search for Strangelets in Lunar Soil KE HAN, Yale University, ALEXEI CHIKANIAN, EVAN FINCH, RICHARD MAJKA, JACK SANDWEISS, JEFFREY ASHENFELTER, ANDREAS HEINZ, PETER PARKER, PETER FISHER, BENJAMIN MONREAL, JES MADSEN — The theoretical existence of Strange Quark Matter (SQM) with similar amounts of up, down and strange quarks in one single hadronic bag has been postulated for over two decades. A wide range of experimental searches for strangelets (small lumps of SQM with baryon number less than 10^6) have been conducted but all failed to give a definite answer to the existence of SQM. Our experiment searches for strangelets in lunar soil. Cosmic ray flux deposits strangelets on the Moon with a predicted concentration (one strange oxygen per 10^{16} to 10^{17} normal oxygen atoms) of 10^5 times higher than that on Earth. The lunar soil sample is analyzed using accelerator mass spectrometry through the tandem Van-de-Graaff accelerator at Yale University. The accelerator together with our own designed detection system enables us to identify strangelets at a level of less than 1 per 10^{17} atoms. We have covered mass range 48-55 amu, with a step size of a quarter amu each scan. In the next three months, we are planning to scan another 10 amu or so starting from 55 amu.

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