

Abstract Submitted
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Searching for Strangelets in Lunar Soil at 10^{-17} Sensitivity Level using the Accelerator Mass Spectrometry Technique¹ KE HAN, Yale University, LSSS COLLABORATION — The theoretical existence of Strange Quark Matter (SQM) has been postulated for over three decades. A wide range of experimental searches for strangelets (i.e. 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, where the predicted strangelet concentration is about 10^5 times higher than that on Earth. The lunar soil sample is accelerated to 102 MeV using the tandem Van-de-Graaff accelerator at Yale University and analyzed using the accelerator mass spectrometry technique. We find no strangelet signal in the mass range 42 to 70 amu. The single event sensitivity limit for the existence of strangelet with electric charge equal to 8, 9, or 6 (strange oxygen, fluorine, or carbon) in our covered mass range is about 10^{-17} strangelet per normal atom.

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