Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Application of Modular Forms to Black Holes and String Theory. JOSE PACHECO, AJIT HIRA, REY RODRIGUEZ, EMANUEL LUCERO, JOYCE MONDRAGON, Northern New Mexico College — In Number Theory, the integer partition function $p(n)$ represents the number of distinct ways of representing n as a sum of natural numbers. First, we worked on computer codes, to generate integer partitions for a given integer n,and calculated the values of $p(n)$ all the way up to n =400. Incidentally, on a fast machine, it took 4 days, 0 h, 8 min, and 20 s, of computer time to calculate P (210). In this poster, we present our results on integer partitions, and their applications to Black-Hole Physics and to Super String Theory. One important example we discuss is that of a wall-crossing as a discontinuous change across a co-dimension wall in String Theory. Another example that we present is that of topological effects hidden inside ordinary materials, which hide new particles.

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Date submitted: 14 Jan 2018 Electronic form version 1.4