1056-11-500  **Jorge F Sawyer\*** (`sawyerj@lafayette.edu`), Box 8681, 111 Quad Dr., Easton, PA 18042, and **Clifford A Reiter** (`reiterc@lafayette.edu`), Dept of Mathematics, Easton, PA 18042. *Perfect Parallelepipeds Exist.*

There are parallelepipeds with edge lengths, face diagonal lengths and body diagonal lengths all positive integers. In particular, there is a parallelepiped with edge lengths 271, 106, 103, minor face diagonal lengths 101, 266, 255, major face diagonal lengths 183, 312, 323, and body diagonal lengths 374, 300, 278, 272. Searches for perfect parallelepipeds led to configurations satisfying necessary quadratic diophantine equations but which are not realizable in $\Re^3$; realizable configurations satisfy an additional sixth degree inequality. Brute force searches also give primitive perfect parallelepipeds with some some rectangular faces. (Received September 10, 2009)