- 4. Martin Gardner, Simple proofs of the Pythagorean theorem and sundry other matters, Mathematical Games, Scientific American, October 1964, Volume 211, #4, pp. 118–126.
- 5. Richard K. Guy, *Unsolved problems in number theory*, vol. 1, Springer-Verlag, New York, 1981.
- 6. Thomas Heath, A history of Greek mathematics, Volume II, from Aristarchus to Diophantus, Dover, New York, 1981.
- D. L. MacKay, Solution to Problem E327[1938, 248] proposed by Philip Franklin, Amer. Math. Monthly 46 (1939), 169–170.
- 8. J. P. McCarthy, A Lewis Carroll problem, Mathematical Notes 1196, Math. Gaz. 20 (1936), 152–153.
- Francis L. Miksa, *Table of primitive Pythagorean triangles, arranged according to increasing areas*, 5 vol. ms. comprising a total of 27+980 pp. deposited in UMT file; see Math. Comp. 23 (1969), Review 69, p. 888.
- W. P. Whitlock, Jr., Rational right triangles with equal area, Scripta Math. 9 (1943), 155– 161; ibid., pp. 265–268.

11[11D09].—RANDALL L. RATHBUN & TORBJÖRN GRANLUND, The Integer Cuboid Table, with Body, Edge, and Face Type of Solutions, vii+399 pp. (2 vols.)
+ The Integer Cuboid Auxiliary Table, 100 pp., deposited in the UMT file.

The Integer Cuboid Table and its Auxiliary Table is the collation of computer searches for all three types of integer cuboids as noted in Problem **D18** of [1, pp. 97–103]. The range of the smallest edge is from 2 to 333,750,000 exhaustively, and 19,929 primitive cuboids were found (6800 body, 6749 face, and 6380 edge).

There exist earlier lists of cuboids, or cuboid generators, but they cover only one type of cuboid at a time, or list only the generators [2-8, 11]. Furthermore, they are not exhaustive over the dimensions of the cuboid, and have corrections [9, 10, 12]; hence this present table, which attempts to be accurate and complete both over the dimensions and type of cuboid solutions.

The new table is presented as a two-volume set, owing to its extensive length. There are 50 cuboids listed per page. At the top of the page is the indexed range of cuboids covered, both by their smallest edge and number of actual occurrence. Upon each line is listed the type of cuboid, B, F, E standing for body, face, and edge cuboids, respectively. Next is given the three edges and body diagonal of the actual cuboid. The primitive Pythagorean generator pairs for each type of cuboid are the last set of entries per solution. At the bottom of each page is given the subtotal of the B, F, E types and then a running total of all types found. The Auxiliary Table is indexed as a supplement to match the cuboid table, giving the irrationality of either the edge or diagonal of a selected cuboid in terms of a square and small excess or deficit, whichever is closer.

The seven-page introduction provides an adequate instruction about the integer cuboid problem, and introduces some properties of the Pythagorean generators associated with each type of solution. Additionally, a simple summarization is provided of the cuboid table, including other tables resulting from its study, such as cuboid solutions with pairs of common values, extended B, F, E solutions not covered in the current table, but derivable from an entry, etc.

The first author is making available a catalog and/or copy of one of these tables upon request. Additionally, an extensive bibliography of over 60 references on the integer cuboid is also available. It is hoped that the Integer Cuboid Table will be extended through at least the first 1,000,000,000 integers for the smallest side.

Finally, the perfect cuboid was not found. If it exists, the smallest edge must be greater than 333,750,000.

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- 1. Richard K. Guy, *Unsolved problems in number theory*, vol. 1, Springer-Verlag, New York, 1981.
- 2. Maurice Kraitchik, On certain rational cuboids, Scripta Math. 11 (1945), 317-326.
- 3. ____, *Théorie des nombres*, Tome 3, Analyse Diophantine et Applications aux Cuboides Rationnels, Gauthier-Villars, Paris, 1947, pp. 122–131.
- 4. ____, Sur les cuboides rationnels, Proc. Internat. Congr. Math. 1954, vol. 2, Amsterdam, 1954, pp. 33-34.
- 5. Jean LaGrange, *Sur le cuboide entier*, Seminaire DeLange-Pisot-Poitou (Groupe d'étude de Théorie des Nombres), 17ème année, 1975/76, #G1, 5 pages.
- 6. Mohan Lal and W. J. Blundon, Solutions of the Diophantine equations $x^2 + y^2 = 1^2$, $y^2 + z^2 = m^2$, $z^2 + x^2 = n^2$, Math. Comp. 20 (1966), 144–147.
- 7. John Leech, *The location of four squares in an arithmetic progression, with some applications*, Computers in Number Theory (A. Oliver, L. Aitkin, and Brian J. Birch, eds.), Academic Press, London and New York, 1971, pp. 83–98.
- Five tables relating to rational cuboids, 46 sheets of computer output, UMT file, University of Stirling, Stirling, Scotland, January 1977; see Math. Comp. 32 (1978), 657– 659.
- _____, Table Errata 554—M. Kraitchik, *Théorie des nombres*, Tome 3, Analyse Diophantine et Applications aux Cuboides Rationnels, Gauthier-Villars, Paris, 1947, pp. 122-131; 555—M. Kraitchik, *Sur les cuboides rationnels*, Proc. Internat. Congr. Math., 1954, vol. 2, Amsterdam, 1954, pp. 33-34; see Math. Comp. 32 (1978), 661.
- 10. Daniel Shanks, Corrigenda, M. Lal and W. J. Blundon, Solutions of the Diophantine Equations $x^2 + y^2 = l^2$, $y^2 + z^2 = m^2$, $z^2 + x^2 = n^2$, Math. Comp. 20 (1966), 144–147; see Math. Comp. 23 (1969), 219.
- 11. William Gideon Spohn, Jr., *Table of integral cuboids and their generators*, 4pp+45pp reduced-size computer printout, UMT file, Applied Physics Laboratory, Johns Hopkins University, Laurel, Maryland, 1978; see Math. Comp. **33** (1979), Review **4**, 428-429.
- _____, Table Errata 558—John Leech, Five tables related to rational cuboids, UMT 12, Math. Comp. 32 (1978), 657–659; see Math. Comp. 33 (1979), 430.
- 12[11D09].—RANDALL L. RATHBUN & TORBJÖRN GRANLUND, *The Classical Rational Cuboid Table of Maurice Kraitchik*, revised and enlarged, ii+(3-page errata)+135pp., deposited in the UMT file.

Maurice Kraitchik first discussed the problem of certain rational cuboids in 1945, giving a table of 50 cuboids at the end of his article [1]. He had published two years later, in the third volume [2, pp. 122–131] of his *Théorie des Nombres*, 241 rational cuboids of the body type for the odd side less than 1,000,000. He added 16 more new cuboids in 1954 in his addendum [3]. John Leech discusses the errata of Kraitchik's tables, giving a list of misprints and omissions [4].

The present table is a new revision of Maurice Kraitchik's originals, completely corrected for all errors and omissions. It is further expanded by extensive computer search to completely cover all odd sides < 333,750,000 of the