

15 Colonial Road
West Orange, New Jersey 07027
November 19, 1973

Dr. Neil J. A. Brown
Bell Telephone Laboratories
Room 2C-363
Murray Hill, New Jersey 07974

Dear Dr. Brown:

One type
of crystallographic

Such as

1. 2, 9, 18, 27
Isomorphism of

1. 2, 10, 32, 54
Geometric class

1. 2, 17, 34, 51
Space groups in

1. 2, 17, 34, 51
Space groups in

All these numbers
Crystallographic
to work by N. Brown
1974 Britannica Book of the Year

Your coverage
is useful.

Scan
add link
in 4 sequences

Neil J. A. Brown

f91

4028, 4029

6226
6227

12 Colonial Woods Drive
West Orange, New Jersey 07052
November 18, 1975

Dr. Neil J. A. Sloane
Bell Telephone Laboratories
Room 2C-363
Murray Hill, New Jersey 07974

Dear Dr. Sloane:

One type of sequence that does not appear in your A Handbook of Integer Sequences or the first supplement concerns the enumeration of crystallographic groups.

Such sequences include:

n

0 1 2 3 4
1, 2, 9, 18, 118

Isomorphism classes of crystallographic point groups in n dimensions.

new
6226

1, 2, 10, 32, 227

Geometric classes of crystallographic point groups in n dimensions.

~~6226~~ 4028

1, 2, 17, 219, 4783

Space groups in n dimensions, counting a pair of enantiomorphic groups as one.

4029

1, 2, 17, 230) 4895

Space groups in n dimensions, counting enantiomorphic groups separately.

new
~~6227~~

All these numbers, except the 4783, can be found in T. Janssen, Crystallographic Groups, Elsevier, 1973. The number 4783 is attributed to work by H. Brown, J. Neubuser, and H. Zassenhause reported in the 1974 Britannica Book of the Year, p.448.

Your coverage is quite extensive and I have found your book very useful.

Very truly yours,

Eric S. Rosenthal

Eric S. Rosenthal

[Jan 73]

Ash McKay

12 Colonial Woods Drive
West Orange, New Jersey 07052
December 22, 1975

Dr. N. J. A. Sloane
Room 2C-363
Bell Laboratories
600 Mountain Avenue
Murray Hill, New Jersey 07974

Dear Dr. Sloane:

Thank you very much for acknowledging my letter about sequences enumerating crystallographic groups. I believe I did list all the terms of those sequences that I had encountered in my very limited reading. The last terms were 118 isomorphism classes of four-dimensional crystallographic point groups, 227 geometric classes of four-dimensional crystallographic point groups, 4783 geometric classes of four-dimensional space groups with mirror images counted as one groups, and 230 three-dimensional space groups with mirror images counted as two groups.

Irving Kaplansky's article on mathematics in the 1974 Britannica Book of the Year explicitly states that the term after 230 is unknown. I do not remember reading similar statements about the last terms given for the other sequences.

Your use of the title "Dr." in addressing me is appreciated, but premature. I am still a graduate student in mathematics at Princeton. I am on a medical leave of absence, so I have not been able to study these sequences in the library there.

Very truly yours,

Eric S. Rosenthal

Eric S. Rosenthal

RE-A
RE-ROUSE
RE-FIBERUSA



Bell Laboratories

600 Mountain Avenue
Murray Hill, New Jersey 07974
Phone (201) 582-3000

December 17, 1975

Dr. E. S. Rosenthal
12 Colonial Woods Drive
West Orange, New Jersey 07052

Dear Dr. Rosenthal:

Thank you very much for your interesting letter of November 18, and for telling me about the sequences arising from crystallographic groups. It is too bad such a small number of terms are known in these sequences. But if it took Neubüser and Zassenhaus to find 4783, it must be a very hard problem. A group theorist friend of mine will be visiting here next week and I will consult him about this. But I take it from your letter that (as far as you know) no more terms have been computed in any of these sequences?

It was very kind of you to write.

Yours sincerely,

MH-1216-NJAS-mv

N. J. A. Sloane