

Spin Object in Space as Knight on Infinite Chessboard

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Abstract: Spin object in space as a knight on infinite chessboard was noticed.

Keywords: Ratio of spin object energy to its delocalization energy on the elliptic surface, number 277

1. INTRODUCTION

In the previous article the ratio of spin object energy (whole) to its absolute value of delocalization energy (part of a whole) was counted on the elliptic surface in the amount of n = 277. [1] This result equals the number of squares on infinite chessboard that a knight can reach in six moves from a fixed square. [2]

2. CALCULATION

Number of squares f(n) on infinite chessboard that a knight can reach in n moves from a fixed square is given with the help of next relations [2]:

$$f(n) = \begin{cases} 1 & n = 0 \\ 8 & n = 1 \\ 33 & n = 2 \\ 1 + 4n + 7n^2 & n \ge 3 \end{cases}$$
(1)

Yielding 277 squares for six moves since:

$$f(6) = 1 + 4x 6 + 7x 6^2 = 277.$$
 (2)

3. CONCLUSION

A knight jumping on 277 squares of infinite chessboard resembles to a spin object in the space confirming its identity in 277 counts. In the world to which they belong both possess the same ratio of the whole to the part of whole. After all, six moves on the chessboard could represent three-dimensional space with six directions at zero time.



Figure1. White knight on the chessboard [3]

DEDICATION

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[2] Katzman, Mordechai. "Counting Monomials." Journal of Algebraic Combinatorics 22 (2005): 331-341.

[3] https://commons.wikimedia.org/wiki/File:Chess_piece_-_White_knight.JPG. Retrieved April 2025

[4] https://en.wikipedia.org/wiki/277_(number). Retrieved April 2025

ADDENDUM

The number 277 indicates not only what the spin object is supposed to be, but also what it is supposed to have and offer. For instance [4], as a member of the lazy cateter's sequence, 277 counts the maximum number of pieces obtained by slicing a pancake with 23 straight cuts.

277 is also a Perrin number, and as such counts the number of maximal independent sets in an icosagon.

There are 277 ways to tile a 3×8 rectangle with integer-sided squares. And so on. [4]

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