

Fecha: 29 Aug 2013 08:59:56 -0400

Remitente: "Int. J. of Bifurcation and Chaos (IJBC)" <ijbc@wspc.com>

Destinatario: "Manuel Fernandez-Guasti" <mfg@xanum.uam.mx>

Asunto: IJBC: Your Submission IJBC-D-13-00144

Ref.: Ms. No. IJBC-D-13-00144

AN INTRINSICALLY THREE DIMENSIONAL FRACTAL

International Journal of Bifurcation and Chaos

Dear Dr. Manuel Fernandez-Guasti,

The Associate Editor and Reviewers have now submitted their comments on your paper. You will see that they are advising you of a revision to your manuscript.

For your perusal, their comments are appended below.

Please submit a list of changes or a rebuttal against each point raised when you submit the final version of the manuscript.

Please make sure that your final version strictly follow the IJBC reference citation format throughout and unify the References format at the end.

Your revision is due by Nov 27, 2013.

To submit a revision, please go to <http://ijbc.edmgr.com/> and log in as an Author. You will see a menu item "Submissions Needing Revision". You will find your submission record there.

Yours sincerely

Guanrong (Ron) Chen, Ph.D.

Editor-in-Chief

International Journal of Bifurcation and Chaos

Comments from the Associate Editor and Reviewers:

Reviewer #2: This paper describes a new type of Mandelbrot set, based on a very special definition of multiplication of three-dimensional vectors. The set shown in the pictures is definitely new, some of its properties resemble the properties of the classical plane Mandelbrot set. Several other papers on related constructions have appeared in recent time, in particular the work on the Mandelbulb, and the author refers to this work.

While the motivation for the paper - the special non-distributive multiplication - comes from the abstract mathematical theory of Clifford algebras, the methods used here for the study of the Mandelbrot set are rather the tools of physicists dealing with chaos theory - pictures done by some open source 3D graphics software and simple calculations for special parameters. This raises the question to whom the paper is addressed.

If the author wants to address algebraists, and introduce them to chaos, the paper should be sent to a journal of algebra.

If the author wants to reach colleagues in chaos theory, the journal is appropriate but the presentation has to be changed completely. The notation c_2^2 in the abstract and c_2^3 in the text, which the author apparently confuses himself, and describes himself as clumsy, should be completely removed. Call it C, S or M. The introduction should address people working in chaos and should only mention that the motivation comes from Clifford algebras, perhaps quoting the paper in Adv. Appl. Clifford Alg. where the author introduced his type of multiplication.

Topics like scators and hyperbolic numbers cannot be assumed known to the reader of Bifurcation and Chaos. Probably even nilpotent has to be explained.

For people working in chaos theory, the equations (4) or (10) probably form a good starting point but it has to be noted what $0/0$ means. The introduction of the product with different notation $(A_0; A_1, A_2)$ instead of $(s; x, y)$ will not bring them much more insight. Do they need Lemma 1 and 2 ? When the author wants to tell about his product, he must motivate the reader who is not familiar with Clifford algebras.

On the other hand, the generation of the set is the same as for the classical M-set, and Table 1 is well-known - references could be given. However, the reader wants to know which properties of the new set are similar and which are quite different from the M-set. This must be clarified.

For example, the referee does not completely understand what "divergent vicinity" in Lemma 3 means. There is a section 3.1 but not 3.2. Readers from chaos will probably not agree that "The basin of attraction of periodic orbits of maps on the real line has only recently been addressed." The conclusion is not very informative, so it remains unclear what is the main content of the paper.

Nevertheless, the paper constructs a bridge between abstract algebra and chaos, which seems rare. If the author manages to rearrange the paper and to clarify his results in sections 3 and 4, it should be interesting for the readers of Bifurcation and Chaos.