



SDI Review Form 1.6

Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2014_BJMCS_10887
Title of the Manuscript:	On the Weyl approach to tensor representations of exceptional Lie groups: The case of G_2 and F_4
Type of the Article	

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	The paper presents a direct approach to the representations, avoiding the traditional method of highest weight theory, based on the Weyl technique, trying to understand the representations in terms of symmetry properties of Young tableaux, for the exceptional Lie groups G_2 and F_4. The paper is really well written and the results are very interesting: - The group G_2 is very well understood with this viewpoint, dispelling one of the remaining uncertainties about this group: as any of the classical groups, the irreps can be understood in terms of symmetry types, starting from the defining seven dimensional representations and taking into account the natural action of G_2 as the automorphism group of the unit imaginary octonions. I have enjoyed the explanation in the paper. - For the group F_4 there remain some aspects to be worked out by the authors with this approach, trying to find a more compact geometrical	While the case of G_2 fits rather well into the scheme of Weyl, the obstructions for F_4 (and possibly the E-series) are probably due to the fact that these algebras are not so idoneously embedded into classical algebras, meaning that the adjoint representation of the superalgebra splits as the adjoint representation of the subalgebra plus the fundamental representation of minimal dimension. This fact requires modification of the strategy, which is currently being analyzed by means of additional techniques. We hope to find a satisfactory mechanism soon.



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	description of the irreducible representations, besides its purely algebraic description. The expectation of the author, confident in finding some generalization of the procedure in order to cover this Lie group and even the groups of the E-series, makes me want to be aware of such advance, that for sure he will obtain.	
<u>Minor</u> REVISION comments	Just, as the only suggestion for the paper, in reference 8 " <i>L. J. Boya, R. Campoamor-Stursberg. Composition Algebras and the two Faces of G2, Int. J. Geom. Methods in Physics 7 (2010), 367-378. ArXiv 0911.3387 [math. phys.]. See also L.J. Boya, C. Rivera. On regular polytopes, Rep. Math. Phys. (Poland) 71(2), 149-161.</i> " after the "main" reference, it appears "See also" and a second reference. I consider that the second reference (very interesting, in my opinion) should be included as a regular reference, not as the second part of another reference (or it should be removed if the author does not consider interesting including such reference). Furthermore, such second reference has not included the year (2012).	We have actually separated and maintained both references, as they are relevant in the context where they have been cited. In addition, various typos have been corrected along the text.
<u>Optional/General</u> comments	The paper is really well written and the results are very interesting	