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Journal Name:	Physical Science International Journal
Manuscript Number:	2014_PSIJ_10270
Title of the Manuscript:	Multidimensional Treatment of the Expanding Universe
Type of the Article	

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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		
Minor REVISION comments	<p>1-It is not really clear why authors pick up six dimensions and not 7 or 5 for example. This must be clarified more in the manuscript. The following references are important to cite accordingly: Mongan, T., Gen. Rel. Grav. 33 (2001) 1415-1424 Mongan, T., Gen. Rel. Grav. 35 (2003) 685-688 R. Arnowitt, J. Dent and B. Dutta, Phys. Rev. D 70 (2004) 126001 L. Randall and R. Sundrum, Phys. Rev. Lett. 83 (1999) 3370; Phys. Rev. Lett. 83 (1999) 4690 S. Chatterjee, D. Panigrahi, A. Banerjee, Class. Quantum Grav. 11, 371 (1994). S. Chatterjee, B. Bhui, M. B. Basu, A. Banerjee, Phys. Rev. D 50, 2924 (1994). R. A. El-Nabulsi, Research in Astron. Astrophys. 11, No. 8, 888 (2011) R. A. El-Nabulsi, Astrophys. Space Sci. 324, 71 (2009) S. Chakraborty, A. Roy, Int. J. Mod. Phys. D 8, 645 (1999). S. Chatterjee, A. Banerjee, Class. Quantum Grav. 10, L1 (1993). 6. A. Banerjee, D. Panigrahi, S. Chatterjee, J. Math.</p>	<p>Whole space is considered to be Euclidean and at least a six-dimensional one, because for it the simple interpretation of the spin and isotopic spin is possible [1]. The case 7D may be considered in future when observations will be more precision ones.</p>



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	<p>Phys. 36, 3619 (1995) R. A. El-Nabulsi, Gen. Rel. Grav. 43, 1, 261 (2011) P. J. Steinhardt, D, Wesley, Phys. Rev. D 79, 104026 (2009) Je-An Gu and W.-Y. P. Hwang, Phys. Rev. D 66, 024003 (2002) R. A. El-Nabulsi, Fizika B19, 4, 233 (2010) R. A. El-Nabulsi, Fizika B19, 4, 269 (2010)</p> <p>2-The implications of cosmic acceleration of the universe in extra-dimensions and the origin of these extra-dimensions originate from more fundamental theories like brane, Randall-Sundrum, Kaluza-Klein, supergravity....I think this must be also cited in the manuscript. For example, cosmic acceleration is intrinsically an extra-dimensional phenomenon in many compactifications of supergravity models. Warped models give a new picture of the universe as well as new opportunities for both particle physics and cosmology.</p> <p>Some well-known work are:</p> <p>D. H. Wesley, arXiv:0802.3214 [hep-th] D. H. Wesley, arXiv:0802.2106 [hep-th] E. Guendelman, H, Ruchvarger, Found. Phys. 36, 1846 (2006) R. A. El-Nabulsi, Int. J. Mod. Phys. D18, 289 (2009) R. A. El-Nabulsi, Int. J. Mod. Phys. D18, 691 (2009) K. D. Purohit, Y. Bhatt, Int. J. Mod. Phys. A 23, 909 (2008) K. D. Purohit, Y. Bhatt, Int. J. Theor. Phys. 50, 1417 (2011) A. Kadosh et al, Phys. Rev. D86, 124015 (2012) L. V. Nierop et al, JCAP1204, 037 (2012)</p>	<p>Note that in the whole space any elementary particle moves with constant speed c_6 without change its energy while speed of expanding of the 3D sphere in whole Euclidean space is varying in time and only asymptotically becomes constant.</p> <p>This 3D sphere may be considered as a brane expanding in the whole Euclidean space. Significantly that each elementary particle is acted by a cosmological force orthogonal to the 3D sphere. It holds a particle at Compton distance from this sphere.</p> <p>Cosmic acceleration arises only in the standard cosmology.</p>
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	<p>3-Section 3 in the paper requires more attention and a better rewritten. I suggest that authors clarify better the geometrical calculations. At this stage, it is not clear how we can implement this section in the field equations of EGR. I think authors want to clarify something of interest in this section but regrettably, it is not clear enough.</p> <p>4-Now, section 4 discusses an interesting part, yet increasing speed of light could be problematic in cosmology.</p> <p>Some well-known works are: J.D. Barrow and J. Magueijo. Phys. Lett. B 447, 246 (1999). J.D. Barrow and J. Magueijo, Phys. Lett. B 443, 104 (1998). J.D. Barrow and J. Magueijo, Class. Quant. Grav. 16, 1435, (1999). J. Magueijo, J.D. Barrow, H.B. Sandvik, Phys.Lett. B549, 284, (2002). J. Magueijo, Rep. Progr. Phys. 66, 2025 (2003). B. Basset et al, Phys. Rev. D62, 10 (2000). D. Youm,, Phys. Rev. D64, 085011 (2001). J. Podolsky, Int. J. Mod. Phys. D20 (2011) 335</p> <p>5-Sections 5, 6,...requires also polishes. The equations must be better explained. References must be included correctly....</p> <p>6-What disturb me a lot is that the paper is without conclusions and perspectives.</p>	<p>Comparison of the theory with observations shows the inapplicability of the General Relativity equations to cosmology.</p> <p>It is so in the standard cosmology only. In my manuscript, the speed of light is varying in time accordingly to the principle of simplicity and proofed by results of observations.</p> <p>Increase the speed of light in time significantly affects the results of observations at high redshifts and the temperature inside the celestial bodies.</p>
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	<p>7-what are the impacts of the present theory to black holes physics, astrophysics and field theories in general?</p> <p>See for example</p> <p>R. Emparan and H. S. Reall, Living Rev. Rel. 11 (2008) 6</p> <p>V. Pravda, A. Pravdova, and M. Ortaggio, Class. Quant. Grav. 24 (2007) 4407</p> <p>M. Ortaggio, V. Pravda, and A. Pravdova, Class. Quant. Grav. 28 (2011) 105006</p> <p>M. Ortaggio, V. Pravda, and A. Pravdova, Class. Quant. Grav. 26 (2009) 025008</p> <p>G. Gibbons and S. A. Hartnoll, Phys. Rev. D66 (2002) 064024</p> <p>A. Coley, A. Fuster, S. Hervik, and N. Pelavas Class. Quant. Grav. 23 (2006) 7431</p> <p>M. Ortaggio, V. Pravda, and A. Pravdova, Phys. Rev. D82 (2010) 064043</p> <p>A. Chamblin, S. Hawking, and H. Reall, Phys. Rev. D61 (2000) 065007</p> <p>C. Wetterich, Phys. Rev. D 81, 103507 (2010).</p> <p>R. A. El-Nabulsi, J. Korean Phys. Soc. 59, 5 (2011) 2963</p> <p>R. Emparan and H. S. Reall, Phys. Rev. Lett. 88 (2002) 101101,</p>	<p>Clairaut's and Snell's laws along helical geodesics envelope in the 6D lead to Papapetrou' metric which contains no singularity. For this metrics black holes not exist but may exist accretion discs having radius of order $2GM/c^2$ for massive stars. See</p> <p>I.A. Urusovskii. Gravitational Waves and Papapetrou Metric in the Six-Dimensional Treatment of Gravitation. Physics of Wave Phenomena, 2010, 18, No. 3, pp.185-195.</p> <p>Gravitational waves are inhomogeneous ones, exponentially attenuated (like corresponding waves in waveguides).</p>
<p><u>Optional/General</u> comments</p>		