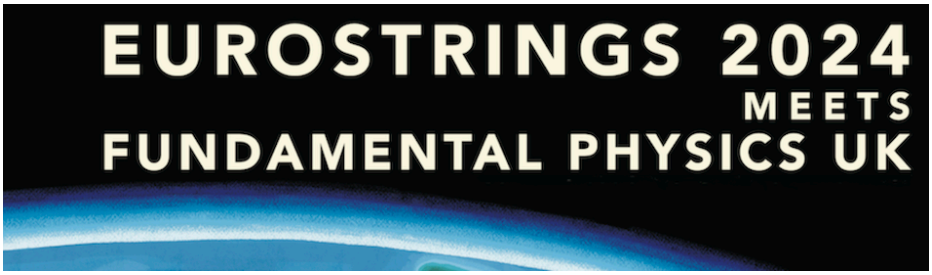

Contribution ID: **85** Type: **Talk in parallel session**

Exotic Spheres, Kaluza-Klein Formalism and Supergravity

Tuesday 3 September 2024 15:10 (20 minutes)

Exotic spheres are seven-dimensional, compact manifolds, which have been shown (through a non-constructive existence theorem) to admit numerous Sasaki-Einstein metrics. Hence, they are suitable candidates for compactifications of M-theory, but have never been considered in this context due to the lack of a suitable description. In this talk, I will discuss metrics on exotic spheres viewed as non-principal Sˆ3 bundles over Sˆ4, i.e. Milnor's bundles, summarising what was found in arXiv:2309.01703 (J. High Energ. Phys. 2023, 100 for the published version) and some ongoing work with David Berman and Martin Cederwall. I will outline the importance of these manifolds in differential geometry, and then present in detail an explicit Kaluza-Klein metric for one of the exotic spheres. I will discuss its properties, in terms of geometric quantities and physical energy conditions, then comment on its relation to 7-dimensional Euclidean gravity and its role in supergravity theories. Finally, I will discuss some interesting extensions of this work, which lies within a little-explored, but potentially fruitful, territory.

Link to publication (if applicable)

https://link.springer.com/article/10.1007/JHEP12(2023)100

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Session Classification: Parallel sessions

Track Classification: Supergravity 1