New exact solutions of Einstein's equations that are curved in 4D but flat in 5D.[1] JONATHAN PERRY, JAMES OVERDUIN, Towson University — To discriminate experimentally between 4D general relativity and extensions to higher dimensions, it is critical to identify solutions of the 5D field equations with acceptable physical properties in 4D. Campbell's theorem guarantees that curved 4D metrics can always be embedded in 5D ones that are flat. Extending previous work, we present four new metrics of this kind. Two are cosmological in form but wave-like in 3D space, with a wavelength that is related to the cosmological constant. The other two are spherically symmetric in 3D space and resemble extensions of the standard 4D Schwarzschild solution. We discuss the properties of all four metrics and the prospects for observational and experimental tests based on them.

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