

1. Record Nr.	UNINA9910819119703321
Autore	Wesson Paul S
Titolo	Five-dimensional physics : classical and quantum consequences of Kaluza-Klein cosmology // Paul S. Wesson
Pubbl/distr/stampa	Hackensack, N.J., : World Scientific, c2006
ISBN	1-281-37897-6 9786611378974 981-277-423-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (x, 222 p.)
Disciplina	530.01
Soggetti	Embeddings (Mathematics) Kaluza-Klein theories Mathematical physics Quantum field theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- 1. Higher-dimensional physics. 1.1. Introduction. 1.2. Dimensions then and now. 1.3. Higher-dimensional theories. 1.4. Field equations in $N=4$ dimensions. 1.5. A primer on Campbell's theorem. 1.6. Conclusion -- 2. The big bang revisited. 2.1. Introduction. 2.2. Flat 5D universes. 2.3. The singularity as a shock wave. 2.4. A bounce instead of a bang. 2.5. The universe as a 5D black hole. 2.6. Conclusion -- 3. Paths in hyperspace. 3.1. Introduction. 3.2. Dynamics in spacetime. 3.3. Fifth force from fifth dimension. 3.4. Null paths and two times. 3.5. The equivalence principle as a symmetry. 3.6. Particle masses and vacua. 3.7. Conclusion -- 4. Quantum consequences. 4.1. Introduction. 4.2. 4D uncertainty from 5D determinism. 4.3. Is mass quantized? 4.4. The Klein-Gordon and Dirac equations. 4.5. Gauges and spins. 4.6. Particles and waves: a rapprochement. 4.7. Conclusion -- 5. The cosmological "constant" and vacuum. 5.1. Introduction. 5.2. The 5D cosmological "constant" 5.3. Astrophysical consequences. 5.4. Vacuum instability. 5.5. Mach's principle anew. 5.6. Conclusion -- 6. Embeddings in $N=5$ dimensions. 6.1. Introduction. 6.2. Embeddings and physics. 6.3. The

algebra of embeddings. 6.4. The Campbell-Magaard theorem. 6.5.
Induced-matter theory. 6.6. Membrane theory. 6.7. Conclusion -- 7.
Perspectives in physics.
