Excursions in Computing Science: Table of Contents

T. H. Merrett*
McGill University, Montreal, Canada

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11c	1	11		035	**Polar coordinates.**
11c	1	12		037	**The affine connection.**
11c	1	13		041	**Parallel transport and geodesics.**
11c	1	14		043	**Absolute slopes.**
11c	1	15		046	**Gradient, divergence and curl with absolute slope.**
11c	1	16		049	**Spherical polar coordinates.**
11c	1	17		053	**Curvature.**
11c	1	18		061	**Negative curvature.**
11c	1	19		065	**The Ricci tensor.**
11c	1	20		067	**More protor calculator.**

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11c	1		13	077	**Newton's constant.**
11c	1		14	077	**Gauss' law** for volume and surface integrals
11c	1		15	077	**Message through the Earth.**
11c	1		16	079	**Falling traffic lights**
11c	1		23	081	**Levi-Civita symbol, alternating tensors.**
11c	1		24	083	**Physical tensors.**
11c	1		25	084	**Orthonormal polars.**
11c	1		36	087	**Hotplate geometry.**
11c	1		37	090	**Absolute slope and curvature.**
11c	1		38	090	**Bianchi identities.**
11c	1		39	091	**Divergence-free curvature.**
11c	1		40	092	**Number of components of the curvature tensor.**
11c	1		41	092	**Angular excess at fixed latitude.**
11c	1		42	096	**Local flatness.**
11c	1		43	099	**The boundary of boundary is zero.**
11c	1		46	100	**Curvature of lines.**
11c	1		49	104	**What functions for ch, sh?**
11c	1		51	106	**Hyperboloid.**
11c	1		52	107	**Paraboloid.**
11c	2	22		002	**Curved timespace.**
11c	2	23		005	**Gravitational redshift.**
11c	2	24		009	**Spherically symmetric gravity.**
11c	2	25		011	**Schwarzschild orbits and black holes.**
11c	2	26		016	**Rotationally symmetric gravity.**
11c	2	27		019	**Kerr orbits and black holes.**
11c	2	28		026	**Tides.**
11c	2	29		028	**Light orbits.**
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11c	2	31		033	**Cosmology.**
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11c	2	33		039	**Gravitational irreversibility.**
11c	2	34		043	**Alternatives to geometry.**
11c	2		02	048	**Schwarzschild metric.**
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11c	2		24	052	**Newtonian limit.**
11c	2		25	052	**Inflation.**
11c	2		28	053	**Negative energy; warp drives.**
11c	2		29	056	**Negative mass.**
11c	2		30	056	**Blandford-Znajek mechanism.**
11c	2		32	056	**Gravitational waves.**
11d	1	01		001	**Central Forces.**
11d	1	02		004	**Gravity vs. Electricity.**
11d	1	03		004	**Energy and momentum scales.**
11d	1	04		008	**Divergence, gradient and** $\vec{\text{div}}$ $\vec{\text{grad}}$**.**
11d	1	05		009	**Electrodynamics departs from gravitation.**
11d	1	06		013	**Invariants, cross-products and convention.**
11d	1	07		019	**Electromagnetic waves.**
11d	1		04	022	**Gauss' law** for fields from charge.
11d	1		09	022	**Visualizing magnetic fields.**

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11d	2	09		007	**The Wave Equation.**
11d	2	10		010	**The Schrödinger Equation I; Physics.**
11d	2	11		013	**The Schrödinger Equation II; Animating in 1D.**
11d	2	12		019	**The Schrödinger Equation III; Animating in 2D.**
11d	2		04	024	**Stability** of numerical solutions of the wave equation.
11d	2		05	025	**The Hamiltonian.**
11d	2		07	026	**Dispersion relations.**
11d	3	13		001	**The electromagnetic Schrödinger equation.**
11d	3	14		003	**Simulating a charged wavepacket moving near a current.**
11d	3	15		006	**Links with geometry.**
11d	3	16		008	**Local action versus action-at-a-distance.**
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11d	3		01	012	**Aharanov-Bohm effect.**
11d	3		03	013	**Maxwell's tensor and equations.**
11d	3		04	013	**Gauge theory.**
11d	3		06	014	**Abelian and non-Abelian symmetries.**
11d	3		07	016	**Goldstone and Higgs mechanisms.**
11d	3		08	020	**Quarks and vacuum.**
11d	4	18		001	**Introduction to Quantum Fields.**
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11d	4	23		021	**Multiple and independent systems.**
11d	4	24		024	**A simple field.**
11d	4	25		028	**The Yukawa potential.**
11d	4	26		031	**Perturbation approximations.**
11d	4	27		033	**Fermions.**
11d	4	28		035	**Slopes and antislopes of 2D numbers, etc.**
11d	4	29		042	**Charge conservation and antimatter.**
11d	4	30		045	**Relativistic quantum field theory redux, so far.**
11d	4		02	046	**Heisenberg uncertainty.**
11d	4		03	046	**More uncertainty.**
11d	4		06	048	**Sphere of reflections.**
11d	4		07	049	**Density matrices and inverse tensor product.**
11d	4		08	049	**Certainty and entanglement.**
11d	4		09	050	**Can quantum physics be made more complete? (Part II).**
11d	4		26	054	**Tensor product transposes.**
11d	4		31	054	**Hermitian transposes of reflections, etc.**
11d	4		33	055	**Slopes of Clifford functions.**
11d	5	31		002	**Fermions.**
11d	5	32		005	**Functionals.**
11d	5	33		008	**Gaussian integrals.**
11d	5	34		013	**Diagrams and QED.**
11d	5	35		016	**Chirality and electroweak.**
11d	5	36		023	**Green's functions.**
11d	5	37		030	**Propagators.**
11d	5		03	034	**Programming path integrals.**
11d	5		06	035	**Matrix Gaussians.**
11d	5		09	036	**Even moments.**
11d	5		14	037	**Current from faze invariance.**
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11d	6	38		008	Quantum Computing **Measurement.**
11d	6	38		012	Quantum Computing **Ternary gates.**
11d	6	39		012	**Binary Fourier transform.**
11d	6	40		013	**Quantum Fourier transform.**
11d	6	41		015	**Finding periods.**
11d	6	42		017	**Quantum key distribution.**
11d	6	43		018	**No cloning.**
11d	6	44		019	**Database search.**
11d	6	45		024	**Detecting and correcting errors.**
11d	6	46		028	**Nonlocality; Einstein-Podolsky-Rosen.**
11d	6	47		029	**Building a quantum computer.**
11d	6		07	033	**Implement swap gate.**
11d	6		10	034	**Representing functions.**
12		01		001	**Recursion.** Define "ancestor" in terms of "parent".
12		02		001	**Precedence without parentheses**
12		03		002	**Fractals**
12		04		003	**Mathematical induction.**
12		05		004	**Recursion.** Programming languages.
12		06		004	**L-systems**
12		07		006	**Instantiation.**
12		08		007	Copying state.
12			07	009	Peano curve
12			13	010	Euler's formula, edges, faces, vertices
12			14	010	*Hexagonal numbers*
12			18	012	**Calculus.**
12			19	017	**Continuity.**
12			20	019	**Series.** Binomial coefficients.
12			28	021	Fractional dimension