

Contents

Foreword by Kip S. Thorne	x
---------------------------	---

P A R T O N E

Relativistic Instabilities and Post-Newtonian Approximations

1.	Dynamical Instability of Gaseous Masses Approaching the Schwarzschild Limit in General Relativity <i>Physical Review Letters</i> 12, no. 4 (January 1964): 114–116. Incorporates errata in <i>Physical Review Letters</i> 12, no. 5 (April 1964).	3
2.	The Dynamical Instability of Gaseous Masses Approaching the Schwarzschild Limit in General Relativity <i>The Astrophysical Journal</i> 140, no. 2 (August 1964): 417–33	6
3.	The Dynamical Instability of the White-Dwarf Configurations Approaching the Limiting Mass. With R. F. Tooper <i>The Astrophysical Journal</i> 139, no. 4 (May 1964): 1396–98	23
4.	The Virial Theorem in General Relativity in the Post-Newtonian Approximation. With G. Contopoulos <i>Proceedings of the National Academy of Sciences</i> 49, no. 5 (May 1963): 608–13	26
5.	On a Post-Galilean Transformation Appropriate to the Post-Newtonian Theory of Einstein, Infeld and Hoffman. With G. Contopoulos <i>Proceedings of the Royal Society, A</i> , 298 (April 1967): 123–41	32
6.	The Post-Newtonian Equations of Hydrodynamics in General Relativity <i>The Astrophysical Journal</i> 142, no. 4 (November 1965): 1488–1512	51

7.	Conservation Laws in General Relativity and in the Post-Newtonian Approximations <i>The Astrophysical Journal</i> 158, no. 1 (October 1969): 45–54	76
8.	The Second Post-Newtonian Equations of Hydrodynamics in General Relativity. With Yavuz Nutku <i>The Astrophysical Journal</i> 158, no. 1 (October 1969): 55–79	86
9.	The $2\frac{1}{2}$ -Post-Newtonian Equations of Hydrodynamics and Radiation Reaction in General Relativity. With F. Paul Esposito <i>The Astrophysical Journal</i> 160, no. 1 (April 1970): 153–79	111
10.	Post-Newtonian Methods and Conservation Laws <i>Relativity</i> , ed. M. Carmeli, S. I. Fickler, and L. Witten (Plenum Press, 1970), 81–108	138
11.	The Stability of Gaseous Masses for Radial and Non-Radial Oscillations in the Post-Newtonian Approximation of General Relativity <i>The Astrophysical Journal</i> 142, no. 4 (November 1965): 1519–40	166
12.	On the Onset of Relativistic Instability in Highly Centrally Condensed Stars. With Norman R. Lebovitz <i>Monthly Notices of the Royal Astronomical Society</i> 207, no. 2 (March 1984): 13P–16P	188
13.	Solutions of Two Problems in the Theory of Gravitational Radiation <i>Physical Review Letters</i> 24, no. 11 (March 1970): 611–15	192
14.	The Effect of Gravitational Radiation on the Secular Stability of the Maclaurin Spheroid <i>The Astrophysical Journal</i> 161, no. 2 (August 1970): 561–69	197
15.	Proceedings at Meeting of the Royal Astronomical Society <i>The Observatory</i> 92, no. 989 (August 1972): 116–20	206
16.	The Stability of Stellar Masses in General Relativity <i>Proceedings of the First European Astronomical Meeting, Athens, September 4–9, 1972</i> , vol. 3 (Berlin: Springer-Verlag, 1974), 162–65	211
17.	The Stability of Relativistic Systems <i>Gravitational Radiation and Gravitational Collapse</i> , ed. C. DeWitt-Morette (D. Reidel, 1974), 63–81	215

- | | | |
|-----|--|-----|
| 18. | The Post-Newtonian Effects of General Relativity on the
Equilibrium of Uniformly Rotating Bodies. I, The Maclaurin
Spheroids and the Virial Theorem
<i>The Astrophysical Journal</i> 142, no. 4 (November 1965): 1513–18 | 234 |
| 19. | The Post-Newtonian Effects of General Relativity on the
Equilibrium of Uniformly Rotating Bodies. II, The Deformed
Figures of the Maclaurin Spheroids
<i>The Astrophysical Journal</i> 147, no. 1 (January 1967): 334–52 | 240 |
| 20. | The Post-Newtonian Effects of General Relativity on the
Equilibrium of Uniformly Rotating Bodies. III, The Deformed
Figures of the Jacobi Ellipsoids
<i>The Astrophysical Journal</i> 148, no. 2 (May 1967): 621–44 | 259 |
| 21. | The Post-Newtonian Effects of General Relativity on the
Equilibrium of Uniformly Rotating Bodies. IV, The Roche Model
<i>The Astrophysical Journal</i> 148, no. 2 (May 1967): 645–49 | 283 |
| 22. | The Post-Newtonian Effects of General Relativity on the
Equilibrium of Uniformly Rotating Bodies. V, The Deformed
Figures of the Maclaurin Spheroids (<i>Continued</i>)
<i>The Astrophysical Journal</i> 167, no. 3 (August 1971): 447–53 | 288 |
| 23. | The Post-Newtonian Effects of General Relativity on the
Equilibrium of Uniformly Rotating Bodies. VI, The Deformed
Figures of the Jacobi Ellipsoids (<i>Continued</i>)
<i>The Astrophysical Journal</i> 167, no. 3 (August 1971): 455–63 | 295 |
| 24. | The Deformed Figures of the Dedekind Ellipsoids in the Post-
Newtonian Approximation to General Relativity. With Donna D.
Elbert
<i>The Astrophysical Journal</i> 192, no. 3 (September 1974): 731–46.
Incorporates corrections and amplifications in <i>The Astrophysical
Journal</i> 220, no. 1 (February 1978). | 304 |

P A R T T W O

The Stability and the Equilibrium of Rotating Systems in General Relativity

- | | | |
|-----|--|-----|
| 25. | Criterion for the Instability of a Uniformly Rotating
Configuration in General Relativity. With John L. Friedman
<i>Physical Review Letters</i> 26, no. 17 (April 1971): 1047–50 | 325 |
|-----|--|-----|

26. On the Stability of Axisymmetric Systems to Axisymmetric Perturbations in General Relativity. I, The Equations Governing Nonstationary, Stationary, and Perturbed Systems. With John L. Friedman 329
The Astrophysical Journal 175, no. 2 (July 1972): 379–405
27. On the Stability of Axisymmetric Systems to Axisymmetric Perturbations in General Relativity. II, A Criterion for the Onset of Instability in Uniformly Rotating Configurations and the Frequency of the Fundamental Mode in Case of Slow Rotation. With John L. Friedman 356
The Astrophysical Journal 176, no. 3 (September 1972): 745–68
28. On the Stability of Axisymmetric Systems to Axisymmetric Perturbations in General Relativity. III, Vacuum Metrics and Carter's Theorem. With John L. Friedman 379
The Astrophysical Journal 177, no. 3 (November 1972): 745–56
29. On the Stability of Axisymmetric Systems to Axisymmetric Perturbations in General Relativity. IV, Allowance for Gravitational Radiation in an Odd-Parity Mode. With John L. Friedman 390
The Astrophysical Journal 181, no. 2 (April 1973): 481–95
30. On a Criterion for the Occurrence of a Dedekind-like Point of Bifurcation Along a Sequence of Axisymmetric Systems. I, Relativistic Theory of Uniformly Rotating Configurations. With John L. Friedman 405
The Astrophysical Journal 185, no. 1 (October 1973): 1–18
31. On a Criterion for the Occurrence of a Dedekind-like Point of Bifurcation Along a Sequence of Axisymmetric Systems. II, Newtonian Theory for Differentially Rotating Configurations. With Norman R. Lebovitz 423
The Astrophysical Journal 185, no. 1 (October 1973): 19–30
32. On a Criterion for the Onset of Dynamical Instability by a Nonaxisymmetric Mode of Oscillation Along a Sequence of Differentially Rotating Configurations 435
The Astrophysical Journal 187, no. 1 (January 1974): 169–74
33. Virial Relations for Uniformly Rotating Fluid Masses in General Relativity 441
The Astrophysical Journal 147, no. 1 (January 1967): 383–84

34. On the Slowly Rotating Homogeneous Masses in General Relativity. With John C. Miller 443
Monthly Notices of the Royal Astronomical Society 167, no. 1 (April 1974): 63–79

P A R T T H R E E

Miscellaneous Papers in General Relativity

35. A Limiting Case of Relativistic Equilibrium 463
General Relativity (Papers in Honor of J. L. Synge), ed. L. O’Raifeartaigh (Oxford: Clarendon Press, 1972), 185–99
36. The Geodesics in Gödel’s Universe. With James P. Wright 478
Proceedings of the National Academy of Sciences 48, no. 3 (March 1961): 341–47
37. On the “Derivation” of Einstein’s Field Equations 485
American Journal of Physics 40, no. 2 (February 1972): 224–34
38. The General Theory of Relativity: The First Thirty Years 496
Contemporary Physics 21, no. 5 (1980): 429–49
39. The Increasing Role of General Relativity in Astronomy (Halley Lecture for 1972) 517
The Observatory 92, no. 990 (October 1972): 160–74
40. Einstein’s General Theory of Relativity and Cosmology 532
The Great Ideas Today (Encyclopaedia Britannica, 1979), 90–138
41. A Commentary on Dirac’s Views on “the Excellence of General Relativity” 580
Festi-Val: Festschrift for Val Telegdi, ed K. Winter (Amsterdam: North Holland, 1988), 49–56

*A complete list of publications by S. Chandrasekhar
will appear at the end of the final volume*