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Titolo	Nonlinear gravitodynamics : the Lense-Thirring effect : a documentary introduction to current research // editors, Remo Ruffini, Costantino Sigismondi
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Altri autori (Persone)	RuffiniRemo SigismondiCostantino
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Nota di contenuto	FOREWORD; CONTENTS; The Contributions to the first ICRA Network Workshop and the Third William Fairbank Meeting on the Lense-Thirring Effect; INTRODUCTION TO NONLINEAR GRAVITODYNAMICS: THE LENSE-THIRRING EFFECT; SOME CONSIDERATIONS ON THE VARIETIES OF FRAME DRAGGING; EQUATIONS OF MOTION OF SPINNING RELATIVISTIC PARTICLE IN EXTERNAL FIELDS; EQUATIONS WITH INTRINSIC ROTATION IN GRAVITATIONAL THEORY; SPINNING PARTICLES IN THE KERR FIELD; ENERGY FIRST INTEGRAL FOR SPINNING PARTICLES IN THE SCHWARZSCHILD BACKGROUND; NONGEODESIC MOTION OF CHARGED SPINNING TEST PARTICLES ABSOLUTE AND RELATIVE FRENET-SERRET FRAMES FOR ACCELERATED BLACK HOLE CIRCULAR ORBITS CENTRIPETAL ACCELERATION AND CENTRIFUGAL FORCE IN GENERAL RELATIVITY; ON THE (NON) EXISTENCE OF A GRAVITOMAGNETIC DYNAMO; ROTATION OF THE POLARIZATION PLANE IN THE GRAVITATIONAL FIELD OF ROTATING OBJECTS; GENERAL TREATMENT OF GEODETIC AND LENSE-THIRRING EFFECTS ON AN ORBITING GYROSCOPE; CLASSICAL TORQUE ERRORS IN GRAVITY PROBE B EXPERIMENT; DATA REDUCTION IN THE GRAVITY

PROBE B EXPERIMENT: OPTIMAL ESTIMATION AND FILTERING; THE GRAVITOMAGNETIC FIELD AND ITS MEASUREMENT WITH THE LAGEOS SATELLITES

LENSE-THIRING PRECESSION DETERMINATION FROM LASER RANGING TO ARTIFICIAL SATELLITES ON GRAVITOMAGNETIC AND ROTATIONAL ANALOGUE OF THE HALL EFFECT: A POSSIBILITY TO DETECT LENSE-THIRING FIELD OF EARTH; DETERMINATION OF THE PPN PARAMETER γ THROUGH GEODETIC VLBI; QUANTUM TESTS OF LENSE-THIRING TYPE EFFECTS; RELATIVISTIC PERIASTRON AND NODAL PRECESSION AND QUASI-PERIODIC OSCILLATIONS FROM LOW MASS X-RAY BINARIES; ON GRAVITOMAGNETIC PRECESSION AND QPO IN BLACK HOLE CANDIDATES; MILLISECOND PHENOMENA IN ACCRETING NEUTRON STARS - AN UPDATE

VARIABILITY OF BLACK-HOLE BINARY SOURCES, AND LENSE-THIRING ORBITAL PRECESSION MAGNETOSPHERES AROUND ROTATING BLACK HOLES; LENSE-THIRING EFFECT IN THE SUPERFLUID INSIDE NEUTRON STARS; GENERAL RELATIVISTIC CALCULATIONS OF PRECESSION AROUND RAPIDLY ROTATING NEUTRON STARS; RELATIVISTIC DISKOSEISMOLOGY: C-MODES AND THE LENSE-THIRING EFFECT; GENERATION AND EVOLUTION OF MAGNETIC FIELDS IN THE GRAVITOMAGNETIC FIELD OF A KERR BLACK HOLE; LENSE-THIRING PRECESSION OF ACCRETION DISKS AND QUASI-PERIODIC OSCILLATIONS IN X-RAY BINARIES PROPOSAL FOR A SATELLITE TEST OF THE CORIOLIS PREDICTION OF GENERAL RELATIVITY*
MOTION OF A GYROSCOPE ACCORDING TO EINSTEIN'S THEORY OF GRAVITATION*; DETERMINATION OF THE GEOMETRY OF THE PSR B1913+16 SYSTEM BY GEODETIC PRECESSION

Sommario/riassunto

This book gives a detailed, up-to-date account of the Lense-Thirring effect and its implications for physics and astrophysics. Starting from a profound intuition of Lense and Thirring in 1918, based on a simple solution to the linearized Einstein field equations, this has emerged in the past four decades as a phenomenon of extraordinary importance in cosmology, radio jets in quasars, and the physics of neutron stars and black holes, besides leading to some of the most sophisticated experiments ever performed in the space surrounding our planet.
