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| Autore                  | Ryutova Margarita                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Titolo                  | Physics of Magnetic Flux Tubes / / by Margarita Ryutova                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Disciplina              | 523.72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Soggetti                | Astrophysics<br>Atoms<br>Physics<br>Magnetism<br>Magnetic materials<br>Astrophysics and Astroparticles<br>Atoms and Molecules in Strong Fields, Laser Matter Interaction<br>Magnetism, Magnetic Materials<br>Applied and Technical Physics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Note generali           | Description based upon print version of record.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Nota di bibliografia    | Includes bibliographical references at the end of each chapters and index.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Nota di contenuto       | The Sun's Magnetic elds -- A Closer Look - Small Scale Structures -- Properties of An Isolated Flux Tube - Theory and Modeling -- Waves and Oscillations in a Flux Tube -- Magnetosonic Streaming -- Wave Phenomena in Rare ed Ensembles of Flux Tubes -- Wave Phenomena in Dense Conglomerate of Flux Tubes -- Flux Tube Dynamics in the Presence of Mass Flows -- Moving Magnetic Features (MMFs) -- Reconnection of Flux Tubes - Post-reconnection Processes I - Theory and Observations -- Post.-reconnection Processes II - Theory and Observations - Electro-magnetic Coupling Throughout the Solar Atmosphere -- The Corona and Ensembles of Magnetic Flux Tubes -- Quiescent Prominences -- Filamentary Structures in Universe. |
| Sommario/riassunto      | This book is the first account of the physics of magnetic flux tubes from their fundamental properties to collective phenomena in an ensembles of flux tubes. The physics of magnetic flux tubes is                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

absolutely vital for understanding fundamental physical processes in the solar atmosphere shaped and governed by magnetic fields. High-resolution and high cadence observations from recent space and ground-based instruments taken simultaneously at different heights and temperatures not only show the ubiquity of filamentary structure formation but also allow to study how various events are interconnected by system of magnetic flux tubes. The book covers both theory and observations. Theoretical models presented in analytical and phenomenological forms are tailored for practical applications. These are welded with state-of-the-art observations from early decisive ones to the most recent data that open a new phase-space for exploring the Sun and sun-like stars. Concept of magnetic flux tubes is central to various magnetized media ranging from laboratory plasma and Earth's magnetosphere to planetary, stellar and galactic environments. The book is a valuable resource for graduate students, solar physicists, astronomers, laboratory and space plasma physicists, geophysicists, and specialists in gas- and hydrodynamics.

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