

1. Record Nr.	UNINA9910427692203321
Autore	Ryabova Galina O
Titolo	Mathematical Modelling of Meteoroid Streams // by Galina O. Ryabova
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-51510-9
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (VIII, 68 p. 16 illus., 8 illus. in color.)
Collana	SpringerBriefs in Astronomy, , 2191-9100
Disciplina	523.01
Soggetti	Astrophysics Mathematical physics Sociophysics Econophysics Theoretical Astrophysics Astrophysics and Astroparticles Data-driven Science, Modeling and Theory Building
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- 1. Introduction -- 2. Initial stage: the model stream generation -- 3. The model stream evolution -- 4. The end stage: the model stream now -- 5. Visualization of the results -- 6. Application to real streams, analysis -- Notation conventions -- Glossary -- References -- A1. Transition from the rectangular coordinates to the orbital elements and back -- A2. Transition between the coordinate systems -- A3. Random number generation -- Index.
Sommario/riassunto	Modern computer power and high-precision observational data have greatly improved the reliability of meteoroid stream models. At present, scientific research calls for two kinds of models: precise ones for individual streams, and statistically averaged ones for Solar System dust distribution models. Thus, there is a wide field of study open to stream modellers. This brief describes step-by-step computer simulations of meteoroid stream formation and evolution. Detailed derivations of relevant formulae are given, along with plenty of helpful, digestible figures explaining the subtleties of the method. Each theoretical section ends with examples aimed to help readers practice

and master the material. Most of the examples are based on the Geminid meteoroid stream model, which has been developed by the author in the last 30 years. The book is intended for researchers interested in meteor astronomy and mathematical modelling, and it is also accessible to physics and astrophysics students.
