1. Record Nr. UNINA9910300409603321

Autore	Giri Kinsuk
Titolo	Numerical Simulation of Viscous Shocked Accretion Flows Around Black Holes / / by Kinsuk Giri
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-09540-4
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (148 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	523.8875015118
Soggetti	Astrophysics Mathematical physics Computer science - Mathematics Astrophysics and Astroparticles Theoretical, Mathematical and Computational Physics Computational Mathematics and Numerical Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Overview of Numerical Simulations on Accretion Processes and Our Objectives -- Governing Equations and Computational Methods -- Simulation Procedure and the Test of the Code -- Simulation for Inviscid Sub-Keplerian Flows and Shocks -- Simulation of Viscous Accretion Flows -- Effects of Power-law Cooling in Viscous Flows -- Conclusions and Future Plans.
Sommario/riassunto	The work developed in this thesis addresses very important and relevant issues of accretion processes around black holes. Beginning by studying the time variation of the evolution of inviscid accretion discs around black holes, and their properties, the author investigates the change of the pattern of the flows when the strength of the shear viscosity is varied and cooling is introduced. He succeeds to verify theoretical predictions of the so called Two Component Advective Flow (TCAF) solution of the accretion problem onto black holes through numerical simulations under different input parameters. TCAF solutions are found to be stable. And thus explanations of spectral and timing

properties (including Quasi-Period Oscillations, QPOs) of galactic and extra-galactic black holes based on shocked TCAF models appear to have a firm foundation.