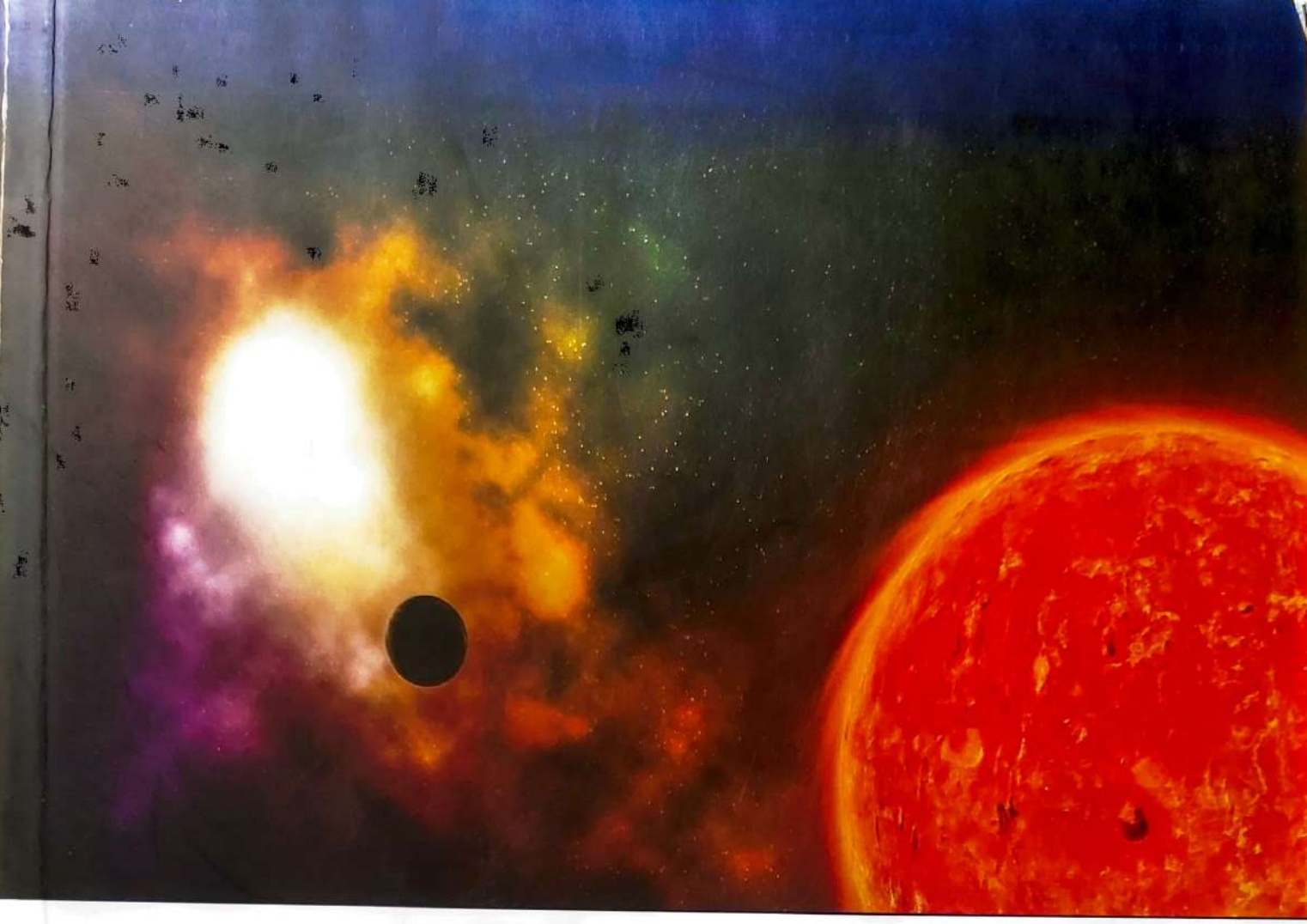

Mahmuda Begum

Molecular Dynamics Simulation of Strongly Coupled Dusty Plasma

Transport and Thermodynamic Properties

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Dusty plasmas have opened up a completely new and fascinating line of research in the field of plasma physics. The collisions among charged dust grains and between charged grains and neutrals play a significant role in complex plasmas. The charged micro-particles can be visualized individually due to their comparatively large size which provides experimental investigations with high temporal and spatial resolution. Dusty plasmas, therefore enable to investigate a vast variety of novel phenomena, like self-organizations, strong-coupling effects, phase transitions, waves, transport properties, etc. at the most fundamental kinetic level. Dusty plasma research has made remarkable progress in the investigations of some fundamental and generic processes ranging from nanofluidics to crystallization at the kinetic level which help us to advance into other fields of research. This highlights the "interdisciplinarity" nature of the dusty plasma research. This book presents a computational study of thermodynamics and transport properties of strongly coupled dusty plasma using Molecular Dynamics (MD) simulation both in presence and absence of external magnetic field.

Mahmuda Begum has recently completed her Ph.D. in Physics under the supervision of Prof. Nilakshi Das from Tezpur Central University, India. Her current area of research is to study the transport and thermodynamic properties of dusty plasma in the strongly coupled regime. She has a number of publications in the international journals to her credit.

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Contents

This book is dedicated to my

Father

Mufti Abdul Wahab

For his endless love, sacrifice and inspiration