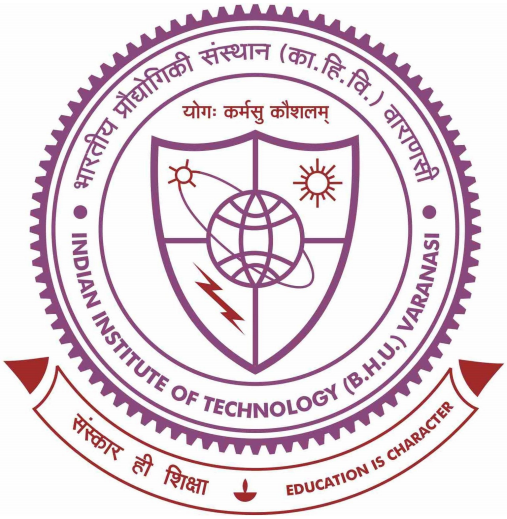
Understanding the variabilities of the magnetic cycles of solar-type stars through dynamo modelling



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for the Award of

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in

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by

VINDYA VASHISHTH

DEPARTMENT OF PHYSICS

INDIAN INSTITUTE OF TECHNOLOGY

(BANARAS HINDU UNIVERSITY)

VARANASI – 221 005

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19171018

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It is certified that the work contained in the thesis titled **Understanding the variabilities of the magnetic cycles of solar-type stars through dynamo modelling** by **Vindya Vashishth** has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

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Bidya Binay Karak

Supervisor
Dr. Bidya Binay Karak
Department of Physics
Indian Institute Of Technology
(Banaras Hindu University)
Varanasi – 221 005

Associate Professor
Department of Physics
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005

DECLARATION BY THE CANDIDATE

I, **Vindya Vashishth**, certify that the work embodied in this thesis is my own bonafide work and carried out by me under the supervision of **Dr. Bidya Binay Karak** from **2019** to **2025**, at the **Department of Physics**, Indian Institute of Technology (Banaras Hindu University), Varanasi. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not willfully copied any other's work, paragraphs, text, data, results, *etc.*, reported in journals, books, magazines, reports, dissertations, theses, *etc.*, or available at websites and have not included them in this thesis and have not cited as my own work.

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Place: IIT (BHU) Varanasi, India

Signature of the student
(Vindya Vashishth)

CERTIFICATE BY THE SUPERVISOR

It is certified that the above statement made by the student is correct to the best of my knowledge.

Supervisor
Dr. Bidya Binay Karak
Department of Physics
Indian Institute Of Technology
(Banaras Hindu University)
Varanasi – 221 005

Associate Professor
Department of Physics
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005

Signature of Head of Department (Physics)

HEAD/विभागाध्यक्ष
भौतिकी विभाग/Deptt. of Physics
भा0प्रौ0सं0/(का0हि0वि0)/IIT-(BHU)
वाराणसी/Varanasi-221005

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I dedicate this thesis to

my beloved family

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प्रथमवयसि दत्तं तोयमल्पं स्मरन्तः शिरसि निहितभारा नारिकेला नराणाम् ।
सलिलममृतकल्पं दद्युराजीवनान्तं न हि कृतमुपकारं साधवो विस्मरन्ति ।।

Meaning: *Remembering the water given in their early growth, coconut trees bear burdens and provide sweet water throughout life. Similarly, a virtuous person never forgets even the smallest kindness and help.*

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