

# Haresh A. Raval

Assistant Professor, Physics and Materials Science Department,  
Jaypee University of Information Technology,  
Waknaghat, Solan-173234, H.P.

Mob: [+91 8707696413](tel:+918707696413) | [haresh.ein@gmail.com](mailto:haresh.ein@gmail.com) |

Date of Birth: 28/11/1988

Nationality: Indian



## Current Areas of Research

Formal aspects of Field theory, Non perturbative studies in Quantum Chromodynamics, Superfield Formalisms, Phenomenology of Heavy ion collisions in High Energy Physics

## Education

1. PhD (Awarded), Specialization: High Energy Physics  
Thesis Title: Implications of a Quadratic gauge in non-perturbative QCD  
Institution: Indian Institute of Technology Bombay (IIT Bombay)  
Supervisor: Prof. Urjit Yajnik  
Thesis submitted: August 2016, Defended: January 2017.
2. B.E. - Electronics and  
Communication, Gujarat University  
Division: First Class  
Year: 2010.
3. 12<sup>th</sup> Std., Science stream  
Gujarat Secondary & Higher Secondary Education Board  
Marks: 76.5 %, Division: Distinction  
Year: 2006.

## Post doctoral Experience

1. Visitor,  
Department of Physics, Banaras Hindu University,  
From: 21/04/2022 To: 30/04/2023
2. Visitor,  
Department of Physics, IIT Delhi,  
From: 01/06/2021 To: 31/01/2022
3. Institute Post Doctoral Fellow,  
Department of Physics, IIT Delhi,  
From: 21/05/2018 To: 20/05/2021
4. National Post Doctoral Fellow (NPDF),  
Department of Physics, Banaras Hindu University,  
From: 5/09/2017 To: 20/05/2018
5. Research Associate,  
Department of Physics, IIT Bombay,  
From: 1/09/2016 To: 13/08/2017

## Publications

Journal: 12 (Single author: 7, First author: 4), Book chapter: 2.

A separate list is attached at the end of Resume.

## Achievements, Awards and Recognitions

1. Awarded National Post Doctoral Fellowship for Project 'Consequences of a Quadratic Gauge and Role of the FFBRST' by SERB, DST, Govt. of India. August 2017.
2. Qualified Graduate Aptitude Test in Engineering (GATE 2011) exam in Physics, Percentile: 99.04, All India Rank 41, February 2011.
3. Qualified Joint Entrance Screening Test (JEST 2011) exam in Physics, All India Rank 104, February 2011.
4. Qualified CSIR-UGC NET Exam for Lectureship, All India Rank 68, June 2012.
5. Qualified TIFR Graduate School-2011 (TIFR GS-2011) exam in Physics, December 2010

## List of Publications:

- Journal

1. Haresh Raval and Urjit A. Yajnik,  
Infrared Abelian dominance without Abelian projection,  
Physical Review D 91, 085028 (2015), DOI : 10.1103/PhysRevD.91.085028
2. Haresh Raval,  
Absence of the Gribov ambiguity in a quadratic gauge,  
European Physical Journal C (2016) 76:243, DOI : 10.1140/epjc/s10052-016-4075-z
3. Haresh Raval, Bhabani Prasad Mandal,  
Non- perturbative to perturbative QCD via the FFBRST,  
European Physical Journal C (2018) 78:416, DOI : <https://doi.org/10.1140/epjc/s10052-018-5920-z>
4. Haresh Raval,  
Search for Abelian dominance in the effective SO(N) theory,  
Physics Letters B 789 (2019) 545–549, DOI : <https://doi.org/10.1016/j.physletb.2018.12.031>
5. Haresh Raval,  
Superspace formulation with a new and extended BRST,  
Physics Letters B 793 (2019) 48–53, DOI : <https://doi.org/10.1016/j.physletb.2019.04.005>
6. Haresh Raval, Bhabani Prasad Mandal,  
Deconfinement to confinement as PT phase transition,  
Nuclear Physics B 946 (2019) 114699, DOI : <https://doi.org/10.1016/j.nuclphysb.2019.114699>
7. Haresh Raval,  
Superspace formulation in the absence of full anti-BRST symmetry,  
EPL, 130 (2020) 21001, DOI : 10.1209/0295-5075/130/21001
8. Haresh Raval,  
Study of Abelian dominance in Sp(N) QCD in the de Sitter background,  
EPL, 133 (2021) 21001, DOI : 10.1209/0295-5075/133/21001
9. Haresh Raval,  
Compact space and infrared behavior of the Effective QCD  
Annals of Physics 430 (2021) 168512, DOI : 10.1016/j.aop.2021.168512
10. Haresh Raval,  
BRST symmetry as a mechanism for confinement,  
Physics Letters B 820 (2021) 136495, DOI : 10.1016/j.physletb.2021.136495

11. Haresh Raval, Bhabani Prasad Mandal  
BRST symmetry as a mechanism for confinement in the inter gauge framework,  
Physics Letters B 832 (2022) 137222, DOI : 10.1016/j.physletb.2022.137222
12. A. Mishra, A. Jahan CS, S. Kesarwani, Haresh Raval, S. Kumar and J.  
Meena, Charmonium decay widths in magnetized matter,  
European Physical Journal A (2019) 55: 99, DOI : 10.1140/epja/i2019-12778-2

- Book Chapter

1. Haresh Raval and Urjit A. Yajnik,  
Infrared Abelian dominance in a special gauge,  
Springer Proc. Phys. 174 5560 (2016)
2. Haresh Raval, Bhabani Prasad Mandal,  
Deconfinement to confinement in a non Hermitian gauge  
theory, Springer Proc. Phys. 261 (2021) 617-630

#### **Educational articles:**

1. Haresh Raval,  
The quark confinement: Life sentence of fundamental constituents of nature,  
Physics Education (India), 31(2), Apr-June 2015