Profile Page

Name	:	Dr Arvind Kumar
Designation	:	Associate Professor
Department	:	Physics
Qualification	:	Ph.D High Energy Physics (IIT Delhi) M.Sc Physics (GNDU Amritsar) B.Sc Non-Medical (HPU Shimla)
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Research Interests :

My research interest includes the study of mass modification of hadrons at finite density and temperature of the hadronic medium. The applications of these studies are for the heavy-ion collision experiments as well as for understanding the properties of astrophysical objects e.g. neutron stars.
My research interest also includes the study of dynamics of Quark Gluon Plasma (QGP) and quarkonium suppression at
LHC energies.

Other Profile Links :

Google Scholar Link :

Google Scholar Click Here

Personal Web Link :

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Publon (Research ID: X-8936-2019) Click Here
Research Gate Click Here
INSPIRE-HEP Click Here

Journal Publications :

Year	Journal	Publication
2023	Phys. Rev. C 107 (2023) 045203	"Effects of finite volume and magnetic fields on thermodynamic properties of quark matter and fluctuations of conserved charges", Nisha Chahal, Suneel Dutt and Arvind Kumar

2022	Chinese Physics C 46 (2022) 063104	"Quark matter properties and fluctuations of conserved charges in (2+1)-flavored quark model", Nisha Chahal, Suneel Dutt and Arvind Kumar
2022	Nucl. Phys. A 1022 (2022) 122442	"Effect of vector interaction on magnetized strange quark matter and strange quark star", Manisha Kumari and Arvind Kumar
2022	International Journal of Modern Physics E 31 (2022) 2250050	"Antikaon condensation in magnetized neutron stars", Manisha Kumari and Arvind Kumar
2022	Chinese Phys. C 46 (2022) 024109	η mesons in hot magnetized nuclear matter, Rajesh Kumar and Arvind Kumar
2021	Eur. Phys. J Plus 136 (2021) 19	"Quark matter within Polyakov chiral SU(3) quark mean field model at finite temperature" Manisha Kumari and Arvind Kumar
2021	Eur. Phys. J C 81 (2021) 791	"Properties of strange quark matter and strange quark stars", Manisha Kumari and Arvind Kumar
2020	Phys. Rev. C 102 (2020) 065207	"? mesons in hot and dense asymmetric nuclear matter", Rajesh Kumar and Arvind Kumar
2020	Phys. Rev. C 101 (2020) 015202	"Analysis of pseudoscalar and scalar D mesons and charmonium decay width in hot magnetized asymmetric nuclear matter" by Rajesh Kumar and Arvind Kumar
2020	Phys. Rev. C 102 (2020) 045206	"? meson mass and decay width in strange hadronic matter", Rajesh Kumar and Arvind Kumar
2020	Eur. Phys. J A 56 (2020) 278	" Heavy vector and axial-vector D mesons in hot magnetized asymmetric nuclear matter" by Rajesh Kumar, Rahul Chhabra and Arvind Kumar
2020	Eur. Phys. J Plus 135 (2020) 422	"Decuplet baryons in nuclear and hyperonic medium", Harpreet Singh, Arvind Kumar and Harleen Dahiya
2019	Eur. Phys. J C 79 (2019) 403	"J/psi and $\ eta_c$ in asymmetric hot magnetized nuclear matter: a unified approach of Chiral SU(3) model and QCD sum rules", Rajesh Kumar and Arvind Kumar
2019	Eur. Phys. J Plus 134 (2019) 128	"Octet Baryon Masses and Magnetic Moments in Hot and Dense Isospin Asymmetric Nuclear Matter ", Harpreet Singh, Arvind Kumar and Harleen Dahiya
2019	Chinese Phys. C 43 (2019) 124109	"Charmonia and bottomonia in asymmetric magnetized hot nuclear matter" Rajesh Kumar and Arvind Kumar
2019	Eur. Phys. J Plus 134 (2019) 592	"Possibility of ? meson condensation in neutron stars: Unified approach of chiral SU(3) model and QCD sum rules", Shivam and Arvind Kumar
2018	Eur. Phys. J A 54 (2018) 120	"Magnetic moments of octet baryons in strange matter", Harpreet Singh, Arvind Kumar, Harleen Dahiya
2018	Phys. Rev. C 98 (2018) 025205	"Masses and decay widths of scalar D0 and Ds0 mesons in a strange hadronic medium",Rahul Chhabra and Arvind Kumar
2017	Eur.Phys.J. A 53 (2017) 105	"In-medium pseudoscalar D/BD/B mesons and charmonium decay width ",Rahul Chhabra and Arvind Kumar
2017	Chinese Phys. C 41 (2017) 94104	"Magnetic moments of octet baryons in hot and dense nuclear matter",Harpreet Singh, Arvind Kumar, Harleen Dahiya
2017	Eur. Phys. J C 77 (2017) 726	"In-medium properties of pseudoscalar D_s and B_s mesons", by Rahul Chhabra and Arvind Kumar
2015	Phys. Rev. C 92, 035208 (2015)	Heavy Vector and Axial-Vector Mesons in Hot and Dense Asymmetric Strange Hadronic Matter , Arvind Kumar and Rahul Chhabra
2014	Advances in High Energy Physics, 2014 (2014) , 549726.	"Heavy Scalar, Vector and Axial-Vector Mesons in Hot and Dense Nuclear Medium", Arvind Kumar
2011	Eur. Phys. J. A 47, 164 (2011)	"D mesons and charmonium states in hot isospin asymmetric strange hadronic mat- ter", Arvind Kumar and Amruta Mishra
2010	Eur. Phys. J. A 45, 169 (2010)	Kaon properties in (proto-)neutron star matter", A. Mishra, A. Kumar, S. Sanyal, V. Dexheimer and S. Schramm

2010	Phys. Rev. C 81, 065204 (2010)	"D mesons and charmonium states in asymmetric nuclear matter at finite temperatures", Arvind Kumar and Amruta Mishra
2010	Phys. Rev. C 82, 045207 (2010)	"J/psi and eta_.c in isospin asymmetric hot nuclear matter : A QCD sum rule approach", Arvind Kumar and Amruta Mishra
2009	Eur. Phys. J. A 41, 205 (2009)	"Kaon and antikaon optical potentials in isospin asymmetric hyperonic matter", A. Mishra, A. Kumar, S. Sanyal, S. Schramm

Conference Publications :

Year	Conference	Publication
2022	European Physical Society Conference on High Energy Physics 2021 (EPS-HEP2021)	"Effect of magnetic field on kaon and antikaon in neutron star matter," Manisha Kumari and Arvind Kumar, PoS EPS-HEP2021 (2022) 284
2022	DIS 2021: 28th in the series of annual workshops on Deep-Inelastic Scattering (DIS)	Open strange meson $K^\\pm_1$ in hot and dense nuclear matter , Rajesh Kumar and Arvind Kumar, SciPost Phys. Proc. 8, 055 (2022)
2021	65th DAE Symposium on Nuclear Physics, 1st -5th Dec 2021	"Space-like magnetic form factors of proton in nuclear medium" Arvind Kumar and Harleen Dahiya, Nucl. Phys. 65, 577 (2021)
2021	65th DAE Symposium on Nuclear Physics, 1st -5th Dec 2021	"Asymmetric quark matter in 2+1-flavor Polyakov quark meson model," Nisha Chahal, Suneel Dutt and Arvind Kumar, Nucl. Phys. 65, 584 (2021)
2021	65th DAE Symposium on Nuclear Physics, 1st -5th Dec 2021	"Phase transition in ??equilibrated Strange quark matter," Manisha Kumari and Arvind Kumar, Nucl. Phys. 65, 585 (2021)
2021	65th DAE Symposium on Nuclear Physics, 1st -5th Dec 2021	"Equation of state in magnetized quark matter," Manisha Kumari and Arvind Kumar, Nucl. Phys. 65, 609 (2021)
2020	XXIV DAE-BRNS High Energy Physics Symposium, Jatni, India (2020)	"?B Interactions in the Strange Baryonic Matter", Rajesh Kumar and Arvind Kumar, Springer Proceedings in Physics, 277 (2022) 329
2020	5th International Conference on Particle Physics and Astrophysics (ICPPA-2020)	"Strange quark matter with beta-equilibrium condition", Manisha Kumari and Arvind Kumar, J. Phys.: Conf. Ser., 1690 (2020) 012079
2020	5th International Conference on Particle Physics and Astrophysics (ICPPA-2020)	"Kaons and Antikaons in Multi-Phase Transport Model", Nisha Chahal, Suneel Dutt and Arvind Kumar, J. Phys.: Conf. Ser. 1690 (2020) 012077
2020	5th International Conference on Particle Physics and Astrophysics (ICPPA-2020)	"Impact of nuclear density on the mass splitting of the pseudoscalar D meson" Rajesh Kumar and Arvind Kumar, J. Phys.: Conf. Ser. 1690 (2020) 012112
2020	5th International Conference on Particle Physics and Astrophysics (ICPPA-2020)	"Interactions of ?-meson in asymmetric nuclear matter" Rajesh Kumar and Arvind Kumar, J. Phys.: Conf. Ser. 1690 (2020) 012111
2019	DAE-BRNS Symposium on Nuclear Physics, Dec 2019	"Trace anomaly property in dense quark matter" , Manisha Kumari, Arvind Kumar
2019	DAE-BRNS Symposium on Nuclear Physics, Dec 2019	"Open charmed pseudoscalar mesons in magnetized nuclear matter", Rajesh Kumar, Arvind Kumar
2019	DAE-BRNS Symposium on Nuclear Physics, Dec 2019	"Magnetic field induced decay constant of vector D* meson in hot asymmetric nuclear matter", Rajesh kumar, Rahul Chhabra, Arvind Kumar
2018	1st National Conference on Recent Research and Innovation Trends in Engineering, Sciences and Management (RRITESM-2018), Nov 2018	"Dependence of ? meson condensation on coupling constants" , Shivam and Arvind Kumar

2018	1st National Conference on Recent Research and Innovation Trends in Engineering, Sciences and Management (RRITESM-2018), Nov 2018	"S-wave charmonia in hot and dense nuclear matter under the effect of strong magnetic field",Rajesh Kumar and Arvind Kumar
2018	DAE-BRNS Symposium on Nuclear Physics Dec 2018 (BARC Mumbai)	“P-wave charmonia in hot and dense magnetized nuclear matter”, Rajesh Kumar and Arvind Kumar
2018	23rd DAE-BRNS High Energy Physics symposium Dec 2018	“Quark and Gluon Condensates in Strongly Magnetized Nuclear Matterr”, Rajesh Kumar and Arvind Kumar
2018	DAE-BRNS Symposium on Nuclear Physics, Dec 2018 (BARC Mumbai)	“In medium partial decay width of decay ?(4040) ? D\bar{D}” ,Rahul Chhabra and Arvind Kumar
2018	DAE-BRNS Symposium on Nuclear Physics, Dec 2018 (BARC Mumbai)	“Decuplet baryon magnetic moments in strange matter”,Harpreet Singh, Arvind Kumar, and Harleen Dahiya
2018	DAE-BRNS Symposium on Nuclear Physics, Dec 2018 (BARC, Mumbai)	“Asymmetric quark matter in heavy ion collisions”, Manisha Kumari and Arvind Kumar, 63 (2018) 874
2018	DAE-BRNS Symposium on High Energy Physics 2016	"D and B mesons in hot and dense symmetric nuclear medium”, Rahul Chhabra and Arvind Kumar, Springer Proc.Phys., 203, 657 (2018)
2017	DAE-BRNS Symposium on Nuclear Physics 2017	“ J/psi meson in hot and. dense nuclear medium”, Rahul Chhabra and Arvind Kumar, vol. 62, 786 (2017)
2016	" Physics Opportunities at an ElecTron-Ion Collider” at France	“D* and B* mesons in strange hadronic medium at finite temperature”, Rahul Chhabra and Arvind Kumar, EPJ Web of Conference 112, 04001 (2016)
2016	DAE-BRNS Symposium on Nucl. Phys	"Ds0 and Bs0 mesons in hot and dense symmetric nuclear medium", by Rahul Chhabra and Arvind Kumar, vol. 61, 684 (2016)
2015	DAE-BRNS Symposium on Nucl. Phys	“D0 and B0 mesons in hot and dense strange hadronic medium”, by Rahul Chhabra and Arvind Kumar, vol. 60, 646 (2015)
2015	DAE-BRNS Symp. on Nucl. Phys.	“Baryon Magnetic Moments in Nuclear Matter at Finite Temperature and Density”, by Harpreet Singh, Arvind Kumar, and Harleen Dahiya, vol. 60,pp. 690-691, Dec. 2015.
2011	DAE-BRNS Symposium on Nuclear Physics 2011	"D-mesons and charmonium states in hot isospin asymmetric strange hadronic matter",Arvind Kumar and Amruta Mishra, Nucl. Phys. 56 (2011) 168
2010	DAE-BRNS Symposium on High Energy Physics 2010	"D meson and charmonium states in asymmetric nuclear matter at finite temperature", Arvind Kumar and Amruta Mishra (Page 64)

Research Projects :

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
Principal Investigator	Research Project	Strangeness and Charmness In Heavy Ion Collision Experiments	DST-SERB (OYS Scheme)	01-04-14	31-09-17	11.28 Lakh	Completed	None

Principal Investigator	Research Project	Fluctuations and Correlations: A Hunt to QCD Critical End Point	DST-SERB (CRG Scheme)	23-12-2019	22-06-2023	Rs 504479	Ongoing	None

Events Organized :

Category	Type	Title	Venue	From	To	Designation
STC	National	Advances in nuclear and particle physics: present and future	Physics department, NIT Jalandhar	8-02-16	12-02-16	Coordinator
STC	National	Emerging Fields on High Energy Physics	NIT Jalandhar	15-07-19	19-07-19	Coordinator
One day Workshop	National	Revision of course curriculum of B.Tech Physics	Department of Physics	13-08-2020		Convener
Workshop	National	Use of LaTex in typesetting technical documents	Department of Physics, NITJ	31-08-2020	04-09-2020	Coordinator
STC	National	Advances in High Energy Physics	Department of Physics, NITJ	18-09-2020	22-09-2020	Coordinator
Workshop	National	Statistical Techniques for Data Analysis	NIT Jalandhar	22-11-21	26-11-21	Convener
Workshop	National	LaTeX for Begineers	Physics department, NIT Jalandhar	04-01-23	08-01-23	Convener

PhD Supervised :

Scholar Name	Research Topic	Status	Year	Co-Supervisor
Manpreet	To be decided by RAC	Ongoing	2023-	
Dhananjay Singh	To be decided by RAC	Ongoing	2022-	
Nisha Chahal	Matter at extreme density and temperature	Ongoing	2019-	Dr Suneel Dutt (Main)
Manisha Kumari	Study of compact star within the framework of chiral SU(3) model	Thesis Submitted	2018-	
Rajesh Kumar	Hadron Properties at Finite Density and Temperature	Completed	2017-2021	
Rahul Chhabra	Heavy Mesons in Hot and Dense Matter	Completed	2015-2020	
Harpreet Singh	Magnetic moments of hadrons at finite temeratures and density of the medium	Completed	2014-2021	Dr Harleen Dahiya

PG Dissertation Guided :

Student Name	Dissertation Title	Status	Year	Co-Supervisor
Mukul wadhwa (Roll No. 20313113)	Properties of neutron stars	Completed	2022	
Ritik Dalakoti (Roll No. 20313121)	Quark matter properties within non-extensive NJL model	Completed	2022	
Vidhi Jain (Roll No. 20313130)	Study of Quark matter with non-extensive statistics in linear sigma model	Completed	2022	

Varsha Gautam (Roll No 19313133)	J/? mass-shift in hot nuclear matter : Using chiral SU(3) model and QCD sum rules	Completed	2021	
Shivanshi (Roll 19313128)	Eta meson properties in chiral SU(3) model	Completed	2021	
Dhananjay (Roll No 19313111)	Phi meson properties in chiral SU(3) model	Completed	2021	
Priya (Roll No 18313115)	Dense quark matter in Nambu Jona Lasinio Model	Completed	2020	
Ravindra Kumar (Roll No 18313119)	Nuclear matter properties in sigma-omega model	Completed	2020	
Prakhar (Roll No 17313117)	Thermodynamic properties of heavy mesons using Nikiforov and Uvarov method	Completed	2019	
Shivam (Roll No 17313120)	\rho meson condensation in neutron stars	Completed	2019	
Abhishek Rawat (Roll No 17313101)	Thermodynamic properties of neutron stars using sigma-omega model	Completed	2019	
Kunal Jaiswal (Roll No 17313110)	Hot and dense nuclear matter in effective mean field model	Completed	2019	
Aditya Bhandari (Roll No 16313102)	Nuclear matter in the presence of strong magnetic field	Completed	2018	
Deeksha Rani (Roll No 16313110)	Charmonium production using statistical method	Completed	2018	
Manjeet (Roll No 16313116)	Quark and gluon condensate in nuclear matter	Completed	2018	
Jagat parkash (Roll No 16313113)	Dense nuclear matter in effective mean field	Completed	2018	
Shivang Goyal (Roll No 15322006)	Charmonium Suppression in Heavy Ion Collisions	Completed	2017	
Abhishek (Roll No 15322007)	Antikaon Condensation in Neutron Stars	Completed	2017	
Seema Pal (Roll No 14322014)	Baryon mass modifications in strange hadronic matter	Completed	2016	
Seema (Roll No 14322012)	Baryon masses in hot and dense nuclear matter	Completed	2016	
Karan Sharma (Roll No 13322011)	D mesons in Strange Hadronic Matter	Completed	2015	
Gagan Deep Kaur (Roll No 13322004)	Antikaon Condensation In Neutron Stars	Completed	2015	
Satvir Kaur (Roll No 13322015)	D mesons in Asymmetric Nuclear Matter	Completed	2015	
Ranveer Kaur (Roll No 12313112)	Kaons and Antikaons in Asymmetric Nuclear medium	Completed	2014	

Navdeep Kaur (Roll No 12313109)	Kaons and Antikaons in Hot and Dense Nuclear Medium	Completed	2014	
Anshul Dadwal (12313101)	Lambda (1405) Resonance in Chiral Dynamics	Completed	2014	
Shafali Lakhanpal (Roll No 11313115)	Charmonium Suppression In Heavy-Ion Collisions	Completed	2013	
Khyati Bala (ROll No 10313103)	Study of Expansion of QGP in Heavy-Ion Collisions	Completed	2013	