




भारत सरकार / Government of India
परमाणु ऊर्जा विभाग / Department of Atomic Energy
होमी भाभा राष्ट्रीय संस्थान / Homi Bhabha National Institute
राजा रामन्ना प्रगत प्रौद्योगिकी केन्द्र
Raja Ramanna Centre for Advanced Technology



HBNI Faculty Profile

Name	<i>Shankar Lal</i>	
Designation	<i>Assistant Professor</i>	
Research Area	<i>Design and development of RF accelerators, photo-injectors, beam dynamics study, RF power coupling schemes, study of beam induced fields in RF accelerating structures, their effect on beam parameters and possible schemes for its compensation.</i>	
Research Profile	<i>Presently I am working in Free Electron Laser and Utilization Section (FUS) of RRCAT. My primary research interest is on the design and development of RF accelerators and photo-injectors. This involves the RF design and beam dynamics study, prototyping, investigation of tuning procedures and RF power coupling schemes, tuning & characterization and high power RF testing of RF accelerators. Another research interest is the study of beam induced fields in RF accelerating structures, their effect on beam parameters and possible schemes for its compensation.</i>	
Ten Selected Recent Publications		
1.	Shankar Lal , V. Paramonov, H. Qian, H. Shaker, G. Shu, Ye Chen, F. Stephan”, Design studies of a continuous-wave normal conducting buncher for European X-ray Free Electron Laser”, Nuclear Inst. and Methods in Physics Research, A 1027 (2022) 166220	
2.	Sona Chandran, Bhaskar Biswas, Arvind Kumar, R.S. Saini, Shankar Lal , Pravin Nerpagar, Ravi Kumar Pandit, Saket Kumar Gupta, Umesh Kale, K.K. Pant, “The IR-FEL facility at RRCAT: Commissioning experiments and first saturation of lasing at 28 μm wavelength”, Nuclear Inst. and Methods in Physics Research, A 1003 (2021) 165321	



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3.	Peng-Wei Huang, Houjun Qian , Ye Chen , Daniele Filippetto, Matthias Gross , Igor Isaev, Christian Koschitzki, Mikhail Krasilnikov, Shankar Lal , Xiangkun Li, Osip Lishilin, David Melkumyan, Raffael Niemczyk , Anne Oppelt , Fernando Sannibale ,3 Hamed Shaker, Guan Shu, Frank Stephan , Chuanxiang Tang, Grygorii Vashchenko, and Weishi Wan, “ Single shot cathode transverse momentum imaging in high brightness photoinjectors”, Phys. Rev. Accel. Beams 23, 043401 (2020)
4.	Peng-Wei Huang, Houjun Qian, Ye Chen, Matthias Gross, Igor Isaev, Christian Koschitzki, Mikhail Krasilnikov, Shankar Lal , Sven Lederer, Xiangkun Li, Osip Lishilin, David Melkumyan, Laura Monaco, Paolo Michelato, Raffael Niemczyk, Anne Oppelt, Daniele Sertore, Hamed Shaker, Guan Shu, Frank Stephan, Chuanxiang Tang, and Grygorii Vashchenko, “Anomalous correlation between quantum efficiency and transverse momentum spread in semiconductor cathode photoemission” , Phys. Rev. Accel. Beams 25, 053401 (2022)
5.	Sona Chandran, Bhaskar Biswas, Shankar Lal , Arvind Kumar, R S Saini, M Khursheed, Saket Kumar Gupta, Pravin Nerpagar, R K Pandit and K K Pant, “Commissioning and validation of the injector and electron beam transport systems for the IR-FEL at RRCAT”, Pramana–J. Phys. 93 (2019) 85
6.	Shankar Lal and K.K.Pant,” An algorithm for the design and tuning of RF accelerating structures with variable cell lengths”, Nucl. Instrum. Methods Phys. Res. A 889, 57-62, (2018).
7.	Shankar Lal and K.K.Pant, “Study of the effect of loop inductance on the RF transmission line to cavity coupling coefficient”, Rev. Sci. Instrum. 87 , 083308 (2016).
8.	Shankar Lal and K. K. Pant, “Study of beam loading and its compensation in the Compact Ultrafast Terahertz Free-Electron Laser injector linac”, Rev. Sci. Instrum. 85, 123302 (2014).
9.	B. Biswas, U. Kale, M. Khursheed, A. Kumar, V. Kumar, Shankar Lal , P. Nerpagar, A. Patel and K. K. Pant, “Signature of build-up of coherence in an ingeniously built Compact Ultrafast Terahertz Free Electron Laser set-up”, Current Science, Vol. 105, No.1, 26-31, (10 July 2013).
10.	Shankar Lal , K. K. Pant and S. Krishnagopal, “A novel scaling law relating the geometrical dimensions of a photocathode RF gun to its RF properties”, Rev. Sci. Instrum. 82, 123304 (2011).



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