

Name of the instructor: Professor Satish K. Sharma

Title of the lecture: Design and Development of Beam Steering Antennas

Level: Advanced

Abstract: There is a great demand for high data throughput innovative beam steering antenna solutions for wireless and satellite communication applications. In the last decade, beam steering antennas have seen tremendous progress, primarily due to the maturity of silicon beamforming chipsets, multilayer printed circuit boards, 3D printing technologies, etc. This talk will discuss the theory of electronic beam steering antennas, design, development, and experimental verification results of active flat panel phased array antennas. It will also discuss Risely-Prism-based beam steering antennas which is a mechanical steering antenna. Mainly antenna designs performed in the Antenna and Microwave Lab (AML) at San Diego State University will be included.

Biography: Dr. Satish Kumar Sharma is a Professor and Director of the Antenna and Microwave Lab (AML) at San Diego State University (SDSU). He received the National Science Foundation (NSF)'s prestigious Faculty Early Career Development (CAREER) award in 2009 and DURIP 2016, funded by the Office of Naval Research (ONR). He also received the 2015 IEEE AP-S Harold A. Wheeler Prize Paper Award of the IEEE Antennas and Propagation Society for his coauthored paper on null-steering antennas. He served as an Associate Editor of the IEEE Transactions on Antennas & Propagation journal from August 2010 to June 2017. He also served as an Associate Editor of the IEEE Antennas, Wireless & Propagation Letters between March 2017 to March 2023. His research lab has the facilities to analyze, design, develop, and verify antennas from VHF to millimeter wave (110 GHz) frequencies.

He has published over 300 journal and conference papers and holds two US and one Canadian patents. He has also co-edited three volumes of "*Handbook of Reflector Antennas and Feed Systems*", published by Artech House in May/June 2013. His other coauthored book, "*Multifunctional Antennas and Arrays for Wireless Communication Systems*" was published by IEEE-Press/Wiley in April 2021. He has mentored and advised almost 100 researchers and scholars. He has collaborated with multiple industries on SBIR/STTR Phase I and II projects in addition to the NSF, ONR, and the National Aeronautics and Space Administration (NASA) projects. He has also served as an engineer/consultant with industries. He has been a Distinguished Summer Faculty Fellow at NIWC-Pacific lab for three years. His research interests include microwave and millimeter-wave frequencies beam steering antennas, flat panel phased array antennas, reconfigurable and tunable antennas, 3D printed antennas, inkjet printed conformal array antennas, massive MIMO antennas, antennas for Cube-Satellites, reflector antennas and their feed systems, miniaturized antennas, transparent antennas, antennas for body wearables, metasurface antennas and reconfigurable intelligent surfaces (RIS).