

## On Enhancing Efficiency of Radiative Energy Transfer

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Mon, Jan 22, 2024 at 10:16 AM

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### ON ENHANCING EFFICIENCY OF RADIATIVE ENERGY TRANSFER



## IEEE VTS Distinguished Lecturer Towards On Enhancing Efficiency of Radiative E Transfer

Featuring **Prof. Swades De**

Professor in the Department of Electrical Engineering and an Ir  
Chair Professor at IIT Delhi

Monday January 29, 2024

10:00 AM Eastern Time (US and Canada)

Via Zoom



<https://torontomu.zoom.us/j/96808290854?pwd=WXJSZm5rYUxmYIRMQmhKZ0NZ>

Meeting ID: 968 0829 0854

Passcode: 0129

Wireless sensor nodes are characterized by limited energy sources. Although the interests in wireless connectivity is ever-increasing and the needs for Internet-of-Things (IoT) applications, such as, automated remote access, monitoring, and control are well-appreciated, widespread adoption of networked wireless devices is largely constrained by their affordable deployment and maintenance costs and convenience of their long-term usage. To this end, while energy efficient protocol design is a key for long-lasting network operation, energy harvesting aware solutions are becoming widely popular as green and affordable approaches towards sustainable network operation. Since ambient energy harvesting is not reliable or suitable in many field applications, an interesting approach is charging them via wireless energy transfer. In this presentation, we will discuss the limitations of radiative energy transfer, performance of multihop radio frequency (RF) energy transfer, and some of the use cases of RF energy transfer combined with wireless information transfer. In particular, we will discuss the possible ways of improving radiative energy transfer efficiency through passive and active distributed beamforming. Throughout the presentation, we will mutually corroborate our experimental findings and analytical intuitions in a few application scenarios.

## Date and Time

Date: **29 Jan 2024**

Time: **10:00 AM to 11:00 AM**

All times are (UTC-05:00) Eastern Time (US & Canada)



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## Hosts

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## Registration

Starts **21 January 2024 09:00 AM**

Ends **29 January 2024 10:00 AM**

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## Speakers



### Dr. Swades De

Dr. Swades De received his B.Tech. in Radiophysics and Electronics from University of Calcutta, M.Tech. in Optoelectronics and Optical communication from IIT Delhi, and Ph.D. in Electrical Engineering from State University of New York at Buffalo. He is currently a Professor in the Department of Electrical Engineering and an Institute Chair Professor at IIT Delhi. Before moving to IIT Delhi in 2007, he was a tenure-track Assistant Professor of Electrical and Computer Engineering at New Jersey Institute of Technology (2004-2007). He worked as a post-doctoral researcher at ISTI-CNR, Pisa, Italy (2004), and has nearly 5 years industry experience in India on communication hardware and software development (1993-1997, 1999).

Dr. De's current research directions include energy harvesting communication networks, broadband wireless access and routing, network coexistence, smart grid networks, and IoT communications. To date, he has published over 250 articles in top journals as well as well-known conferences, a few book chapters, an edited book, 2 international/Indian patents, and filed 11 Indian patents and 6 US/World patents. He is also deeply engaged in translating some of his research outcomes through his two technology start-ups that are being incubated at IIT Delhi. Dr. De currently serves on the

editorial boards of IEEE Transactions on Vehicular Technology, IEEE Transactions on wireless Communications, and IEEE Wireless Communications Magazine. He is a fellow of Indian National Academy of Engineering, Indian National Science Academy, and The National Academy of Sciences, India.

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