

## Leaky-wave antennas: from niche applications to mass market



**Presenter:** Prof. Karu Esselle  
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**Time:** 5:30 pm refreshments for 6:00 to 7:00 pm talk,  
Wednesday, 6th December 2017

**Venue:** [Engineering B-313](#)  
Building 175, Engineering Block B, Department of Infrastructure Engineering  
Melbourne University, Parkville (via Grattan Street)

**RSVP:** For catering purposes [please register at EventBrite](#)  
(free event and guests welcome)

### **Abstract:**

Since the discovery of efficient leaky-wave radiation from a slot in a wave guide by Oliner, leakywave antennas have attracted a lot of interest in applications that require beam scanning. Printed planar configurations of LWAs have become very popular, due to low cost. Half-width LWAs based on microstrip lines and substrate-integrated-wave guides have provided an additional advantage of narrow footprint. After briefly reviewing crucial historical milestones in LWAs, this presentation will focus on recent developments in LWA antenna research and practical outcomes, including some that have the potential to further extend applications of LWAs from current niche scanning applications to mass communications such as wireless local area networks and emerging 5G mobile systems.

One such development is fixed-frequency beam steering using only two values of bias voltages, for applications where sweeping the operating frequency is not possible. Several methods of LWA fixed-frequency beam steering have been demonstrated, including one recently developed by the speaker's team that requires only two bias voltage values to steer the beam. This is very promising for millimetre-wave communication systems such as Wi-Gig and potential millimetre-wave modes of 5G. Topics suitable to future research in this area will also be discussed.

**Biography:**

Professor Karu Esselle received the B.Sc. degree in electronic and telecommunication engineering (first-class honors) from the University of Moratuwa, Sri Lanka, and the M.Sc. and Ph.D. degrees in electrical engineering from the University of Ottawa, Canada. He is a professor of electronic engineering at Macquarie University, Sydney, and the past-associate dean of Higher Degree Research of the Division of Information and Communication Sciences. He has also served as a member of the Dean's Advisory Council and the division executive from 2003 to 2008 and several times as the head of the Department of Engineering. He is the chair of the board of management of the Australian Antenna Measurement Facility, deputy director (engineering) of the WiMed Research Center, and elected 2016 chair of both the IEEE New South Wales (NSW) Section and the IEEE NSW Antennas Propagation/Microwave Theory and Techniques Chapter. He directs the Center for Collaboration in Electromagnetic and Antenna Engineering.

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