THE LOG PERIODIC

www.scvemc.org Santa Clara Valley Chapter of IEEE Electromagnetic Compatibility Society

# IEEE SCV EMC Society Meeting: Tuesday, November 8, 2011



**Time: Social 5:30 p.m. Presentation 6:30 p.m.**

**Place: Applied Materials Bowers Cafeteria**
**3090 Bowers Ave., Santa Clara, CA 95051-0804**

**Subject: Antennas and Transmission Lines**

**Speaker: Mark Steffka, EMC Technical Specialist, GM Powertrain; DL**

**Abstract:** **The effective and efficient use of radio frequency communication is solely dependent upon transferring electromagnetic energy to and from an antenna, and this energy transfer is also responsible for EMC issues. Many engineers today working in EMC (as well as those working in electronic system design/development) either have not had a formal background in antennas and transmission lines, or have not had an opportunity to practice their previous knowledge or skills in this area. Since these antennas and "antennas effects" can "make or break" a product's EMC compliance, or render communication systems non-functional - it is critical that there be an understanding of the physics involved in antenna and transmission line design and engineering. This presentation will consist of an explanation of antenna and transmission line theory, show the use of relevant mathematics in antennas, provide overview of computer methods to assist in antenna design, and show "real-life" examples.**

**Speaker Bio:** Mr. Mark Steffka received the B.S. degree in electrical engineering from the University of Michigan in 1981, and a M.S. from Indiana Wesleyan University in 1987. He has almost 30 years of experience in the design and development of military, aerospace, and automotive electronics systems. He is currently with General Motors' Powertrain Electromagnetic Compatibility (EMC) Group. In 2000, he was appointed as a Lecturer at the University of Michigan-Dearborn and in 2006, was also appointed as an Adjunct Professor at the University of Detroit - Mercy. He regularly teaches at both universities with courses on EMC, antennas, and electronic communication systems.

He is the author and/or co-author of many publications on EMC, Radio Frequency Interference (RFI), and his paper to the Society of Automotive Engineers (SAE) Congress on "Engine Component Effects of Spark-Ignition Caused Radio Frequency Engineering (RFI)" was "Judged (by SAE) to be among the most outstanding SAE technical papers of 2007". He is an IEEE member and his professional activities include serving as a technical session chair for SAE and IEEE conferences, was the Technical Program Co-Chair for the 2008 IEEE International Symposium on EMC, and has been an instructor the symposium's "Global EMC University". He has also been an invited speaker at IEEE and SAE conferences held in the United States and international locations. He is a member of the ARRL's EMC Committee, and holds the amateur radio call sign WW8M.

**Refreshments:** **Light Dinner and beverages will be served for a fee. Coffee, tea, and snacks are served free of charge.**

$$\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

$$\nabla \times \vec{H} = \frac{\partial \vec{D}}{\partial t} + \vec{J}$$

$$\nabla \cdot \vec{D} = \rho$$

$$\nabla \cdot \vec{B} = 0$$

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