

## **A Tribute to Harold A. Wheeler: The Ultimate Bridge between Theory and Application**

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Harold A. Wheeler (1903-1996) was acknowledged for his extensive contributions to our field with the 1992 IEEE Antennas and Propagation Society Distinguished Achievement Award. On the 20<sup>th</sup> anniversary of this award in 2012, numerous engineers and researchers gathered at a special session devoted solely to Wheeler's significant contributions, and even the ten presentations delivered that day could only scratch the surface of his work's impact on our field. In addition to those highlights, Alfred Lopez and others have also made efforts to introduce the legacy of Wheeler's contributions to new generations of antenna designers (e.g., A. Lopez, Proc. IEEE Long Island Systems, Applications, and Technology Conference, 2007).

The key to this lasting impact of Wheeler's work is that he routinely and methodically bridged theory and application while simultaneously illuminating both. Numerous examples exist -- and will be highlighted in the presentation -- of his ability to apply circuit models to antenna behavior that are still used today, either in form or in concept. These include the seminal paper entitled "Fundamental Limitations of Small Antennas" in 1947, which is still referenced to this day, as well as his paper introducing the "Wheeler cap" method for measuring antenna efficiency (H.A. Wheeler, Proc IRE, 47, 1959). The use of circuit models to describe antenna behavior is useful not only for design insight, but also for introducing students new to the field to some essential foundational concepts that make understanding antenna behavior more straightforward (J T. Bernhard, Proc. IEEE Antennas and Propagation Symposium, 2012). His contributions went well beyond small antennas, of course, into fundamental array theory -- his infinite current sheet remains a boundary condition and a design goal for array designers everywhere (H.A. Wheeler, IEEE Trans on Antennas and Propagation, 13, 1965). As a fitting tribute that we honor each year, his name is attached to one of the Society's premier paper awards, the Harold A. Wheeler Applications Prize Paper Award. The impact of his work continues to this day because of how he blended his insight, his experience, and his practical outlook to truly produce knowledge for future generations. This is a goal toward which many in the field continue to strive, and any will be lucky to achieve a fraction of Wheeler's current and lasting impact.