



***ECE Distinguished
Lecture Series***

***IEEE Signal
Processing Society***



BIO:

Dr. Andreas Antoniou received the B.Sc. (Eng.Hons.) and Ph.D. degrees all in Electrical Engineering from the *University of London* in 1963 and 1966, respectively. From 1970 to 1983 he served in the Dept. of ECE in *Concordia University*. He served as founding Chair of the Dept. of ECE at *University of Victoria*. His teaching and research interests are in the areas of electronics, network synthesis, digital system design, active and digital filters and digital signal processing. One of his papers on gyrator circuits was awarded the Ambrose Fleming Premium by the *Institution Of Electrical Engineers, UK*. Dr. Antoniou is a Fellow of the *Institute of Electrical and Electronics Engineers* for contributions to active and digital filters, and to electrical engineering education. He has served as editor and member of the Board of Governors for *IEEE Circuits and Systems Society* receiving the CAS Golden Jubilee Medal in recognition of outstanding achievements in the area. He has also received many other awards and honorary doctorates. Dr. Antoniou is author of *Digital Filters: Analysis, Design, and Applications* (McGraw-Hill).

Prof. Andreas Antoniou

University of Victoria, BC

On the Origins of DSP

We tend to think of digital signal processing as one of the recent high technologies that have emerged as a consequence of Moore's law but its roots go back to the 16th century and beyond. The two most fundamental processes in DSP, namely, sampling and interpolation, go back to Gregeory (1638-1675), Newton (1642-1727), and Stirling (1692-1770), even to great Archimedes of Syracuse (287-212 BC). As will be demonstrated by the lecture, when Archimedes derived a practical value for π , he actually used sampling and interpolation. The lecture will also show that, contrary to popular belief, Babbage (1791-1871) did not invent computers but a discrete-time system that could perform interpolation. Thus if Babbage was successful with his difference engine, and programmed it to perform interpolation based on Stirling's formula, he would have constructed the first digital filter, alas in mechanical form.

The lecture will trace the origins and evolution of DSP starting with Archimedes and ending with the prophetic statement of Moore about the number of transistors that can be manufactured on a single VLSI chip.

Monday April 14th, 2003

11:00am - 12:00 pm

Sanford Fleming Building 1105