

Second Laureate Fundamental Research



- **Research Work Title:** Synthesis and Design of Analog Filters, Oscillators and Simulated Impedances using Modern Electronic Circuit Building Blocks.
- **Researcher:** Prof. Raj Senani
- **Nationality:** India
- **Field:** Electronics Engineering
- **Position:** Professor and Head, Division of Electronics and Communication Engineering, Netaji Subhas Institute of Technology, India
- **Scientific Affiliation:** Analog Signal Processing Research Lab., Netaji Subhas Institute of Technology, New Delhi, India

Abstract:

Professor Raj Senani has made excellent contributions to the areas of Analog Signal Processing and Current-mode Circuits through his sustained research work (carried out exclusively in India) which has made very significant impact nationally and internationally. His most significant contributions are: first ever 'floating' inductance simulation circuits without requiring any passive component-matching conditions employing Current Conveyors; a novel method of floating impedance simulation based on Four-terminal-floating-nullors; a variety of electronically-controllable generalized impedance configurations for electronically-controllable functional circuits; first ever single-resistance-controlled-oscillators (SRCO) without constraints and subsequently, development of a large number of SRCOs exhibiting linear tuning laws and electronic controls of oscillation frequency; first ever single-resistance-controlled oscillators using unity gain amplifiers; four new network transformations for higher order filters/oscillator design and a new method for and derivation of a large number of novel universal biquads realizable with modern current-mode building blocks.

Biography:

Raj Senani was born on 1950, at Budaun, India. He received a B.Sc from Lucknow University in 1966, B.Sc. Eng. from Harcourt Butler Technological Institute, Kanpur in 1971, M.E. (Honors) from Motilal Nehru National Institute of Technology (MNNIT), Allahabad in 1974 and his Ph.D. in Electrical Engineering, from the University of Allahabad in 1988. He is currently Head of Division of ECE and the institute Director at Netaji Subhas Institute of Technology, New Delhi, India. Professor Senani's teaching and research interests are in the areas of Bipolar and CMOS analog integrated circuits, Current-mode Signal Processing, Electronic Instrumentation, Chaotic Nonlinear circuits and Trans-linear circuits. He has authored/co-authored 130 research papers in various international journals (leading to over 1200 citations and an h-index of 23). He is serving as an Associate Editor for Circuits, Systems and Signal Processing, Birkhauser Boston, since 2003; has been functioning as Editor or Member of the Editorial Boards of seven other International Journals and an Editorial reviewer for 30 other international Journals. He is a Fellow of Institution of Electronics and Telecommunication Engineers and a Fellow of National Academy of Sciences, India. His biography has been included in several publications of Marquis' Who's Who, USA, International Biographical Center, Cambridge and American Biographical Institute.