

**Data-compressed Spectral Imager:  
A Programmable Front-End Approach**

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**Tuesday, May 10, 2022  
2:00 – 3:00 p.m. Olin 202**

**Reception in Olin 204  
3:00 – 3:30 p.m.**

Over the years infrared imaging technology has enabled many critical applications such as thermal and spectral imaging, medical diagnostics, and remote sensing. While there have been dramatic advances in spectral imaging technology, it is becoming increasingly evident that as the pixel count and spectral bands are increasing, the amount of data produced is becoming prohibitively large for storage, transmission and analysis. Ironically, the trade-off between the size of the data generated and the efficiency in extracting information from the data ultimately puts a limit on the usefulness of big data in decision making within a reasonable amount of time. Not surprisingly, nature has evidently found a way to break this trade-off as exemplified in the human eye, and it is believed that the secret is its ability to produce abstract yet efficient representations of the visual world right at the retina. In this talk, an intelligent readout circuit (iROIC) concept that enables on-chip implementation of the sensing algorithms in analog domain at the pixel level is presented.

**Biography**

Dr. Payman Zarkesh-Ha is a Professor in the Electrical & Computer Engineering Department and Acting Director of Center for High Technology Materials at the University of New Mexico. He received M.S. and Ph.D. degrees in electrical and computer engineering from Sharif University, Tehran, Iran, in 1994 and Georgia Institute of Technology, Atlanta, GA, in 2001, respectively. Prior to joining University of New Mexico in 2006, he was a senior research engineer with LSI Logic Corporation, Milpitas, CA; where he worked on interconnect architecture design for the next ASIC generations. His research interests are statistical modeling of nanoelectronic devices and systems, design for manufacturability, low-power and high-performance VLSI designs. He has published over 100 refereed papers and holds 20 issued patents in this field.