



Joel L. Dawson

Carl Richard Soderberg Professor of Power Engineering Electrical Engineering MIT



Biography

Joel L. Dawson is a new faculty member in the Department of Electrical Engineering and Computer Science who began his appointment in September of 2004. He received the S.B. and MEng degrees in EE from MIT in 1996 and 1997, respectively. For his MEng degree, he participated in the VI-A Internship program at Bell Laboratories in Murray Hill, NJ. He went on to receive the Ph.D. degree in EE from Stanford University in 2003. In his doctoral research, he worked in the area of RF circuit design in the group of Professor Thomas H. Lee. He investigated innovative techniques to improve the power dissipation and linearity of power amplifiers, a key component of wireless systems. In 2003 he co-founded Aspendos Communications, a startup company based in San Jose, CA.

Research

The Dawson research group designs RF and mixed-signal CMOS ICs for communications systems and medical applications. Our research approach centers on the idea that we work in an extremely interesting era for such circuits. Economic forces favor a heavily digital chip, and it is often not profitable to make device and process concessions for the analog circuits. Given that we have millions of digital gates at our disposal, together with analog devices that are fast but otherwise far from ideal, what is the new optimal division of functionality between the analog and digital domains?

We seek answers to this question in part by exercising architectural creativity. In addition, we explore the application of mathematical optimization techniques to allocate resources between analog and digital subsystems.

A list of current projects can be found on the [Research Group](#) page.

Teaching

Prof. Dawson is involved in teaching 6.301 Solid-state Circuits, 6.302 Feedback Systems, and 6.776 High Speed Communications Circuits.

News

[Sanchez and Scharfstein Receive Masters Degrees](#)

[Sungwon Chung to Present Paper at IMS 2007](#)

[Muyiwa Ogunnika Receives New MIT-CIMIT Medical Engineering Fellowship](#)

[CIMIT Awards Grant to Rutkove and Dawson](#)

[Ali Hadiashar to Present Paper at ESSCIRC](#)

[Dawson Receives EECS Award](#)

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6.301: <http://web.mit.edu/6.301/www/> Recitation Notes [Click Here](#)
6.302: <http://web.mit.edu/6.302/www/> Recitation Notes [Click Here](#)
6.776: <http://stellar.mit.edu/S/course/6/sp06/6.776/index.html>



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