

IEEE RRVS SECTION November 2005 Dinner Meeting

15 November 2005

Featuring Biswa Nath Datta, an IEEE Fellow, a Distinguished Research Professor, who Uses Mathematical Solutions for his Active Feedback Controls

Review by Ron Hendrickson

The Engineering building (Room 209) at the Northern Illinois University (NIU) in Dekalb was designated the location for our November meeting. RRVS student section played host for the event. Forty three (43) people were in attendance. Twenty one (21) were NIU students, with the rest being IEEE members, guests, or instructors.

Between the building, parking, food, and the speaker, I grade this meeting a good score (5 smiling faces). Rob "the Vice Chair" of the student chapter even gave us a parking pass to park in the engineering parking lot so we wouldn't get towed away...thank you!. Rob also announced that there are about 60 people in the student chapter (more possible members!) It must be documented that most of the students (21), who were in attendance, were working for their Masters in EE. (The upcoming presentation will be 85 slides in length which is the source for my review)

Biswa Datta from the Right



RRVS and Controls Meeting



Biswa Datta from the Left



Presentation:

Professor Datta opened the presentation by talking about the Millennium Bridge in London England (<http://www.arup.com/MillenniumBridge/>) and the well known bridge in Tacoma, WA. (<http://www.ketchum.org/bridgecollapse.html>). These two examples show the problems on controlling the resonance of bridges. To help control the displacement passive damping could be used. Slide 13 depicts a line graph showing a passive mass damper, a classical closed-loop control, and an instantaneous optimal control. Displacement was greatest for the passive mass damper. The slides in the middle showed the mathematical matrices of eigenvalues/vectors to optimize the feedback control.

In concluding remarks, Professor Datta informed the audience that "Industry in Japan and Germany take a more mathematical approach to industrial problems". He feels that there needs to be a blend of "people with industrial aptitude and interdisciplinary training" for engineers who are across the pond. More training in Linear Algebra, Numerical Linear Algebra and Scientific computing....."Such experience is **RARE**". He also declares that "many engineering text books need to be rewritten incorporating recent developments in matrix computations, scientific computing and mathematical software." (Slide 85)

RRVS would like to thank Professor Biswa N. Datta for his presentation on active feedback controls. This one page summary only covers a small portion of his presentation, if further information is desired Mr. Datta graciously gave out his business card which has a link to his web site for further study (<http://www.math.niu.edu/~dattab> look under research papers at the bottom of his home page) thank you. My notes tell me that our next meeting will be in Jan. 06, so I wish everyone a joyous Holiday season....see you next year!

