

MECHANICAL ENGINEERING

DEPARTMENT SEMINAR



Pierre Dupont

Children's Hospital, Harvard Medical School

Pierre Dupont is the Director of Pediatric Cardiac Bioengineering at the Children's Hospital in Boston and is on the staff of the Harvard Medical School. He received the BS, MS, and PhD degrees in Mechanical Engineering from Rensselaer Polytechnic Institute. He subsequently held a postdoctoral position at Harvard University, and then joined the faculty Boston University, where he progressed through the academic ranks to become Professor of Mechanical Engineering and Biomedical Engineering. At Children's Hospital, Professor Dupont conducts research in image-guided minimally invasive surgery.

Development of robot technology for minimally invasive surgery

11:00 AM Friday, September 18h, 2009

Room 245, 110 Cummington Street

Refreshments served at 10:45 AM

A surgical robot technology based on a concentric combination of pre-curved elastic tubes is described. Rotation and extension of the tubes with respect to each other cause the curvatures to interact elastically and thereby to position and orient the robot's tip. The flexible tubes comprise both the links and the joints of the robot. The achievement of this technology involves the development of applicable design principles, of mechanics-based kinematic models, and of real-time control strategies. Other concurrent work described in the talk concerns the development of tip-mounted tools and of implantable devices for applications to beating-heart intracardiac surgery.