

Theoretical Modeling of the
Dynamics of the Pacing Systems of Heart and Respiration
of Infants in Neonatal Intensive Care Units
Postdoctoral Position

One or two postdoctoral positions are available for a theoretical and computational project at the College of William and Mary and at the University of Virginia in collaboration with UVA Medical Center. The project focuses on the development of predictive models of the cardio respiratory system from continuous EKG, respiratory, and SpO2 signals for infants at high risk of apnea of prematurity (AOP). AOP is one of the most common serious disorders of premature infants, and there exists a substantial clinical need for automated detection and prediction of future episodes from physiological waveforms.

Specific projects tasks: (1) collection of a 10 TB waveform database from infants admitted to UVA Medical Center NICU; (2) creation of pattern recognition algorithms; (3) statistical analysis of collected physiological data; and (4) modeling the coupling between respiration, heart rate and blood pressure by methods of modern nonlinear dynamics. Excellent programming skills (C/C++/Matlab/Matlab GUIDE/SQL) required. Expertise in nonlinear dynamics and signal processing is strongly desired.

Send applications to jbdelo@wm.edu or to HUDSON@virginia.edu

<http://web.wm.edu/physics/DelosWeb/index.php> <http://faculty.virginia.edu/hudson/>

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