

Physiological Signals

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and Umer Hassan

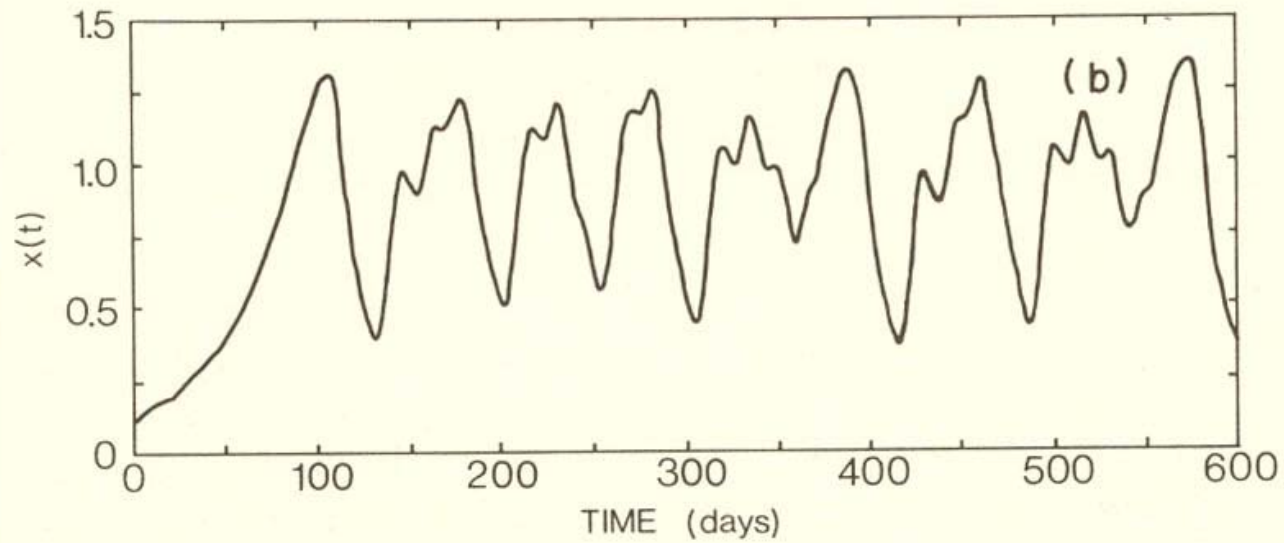
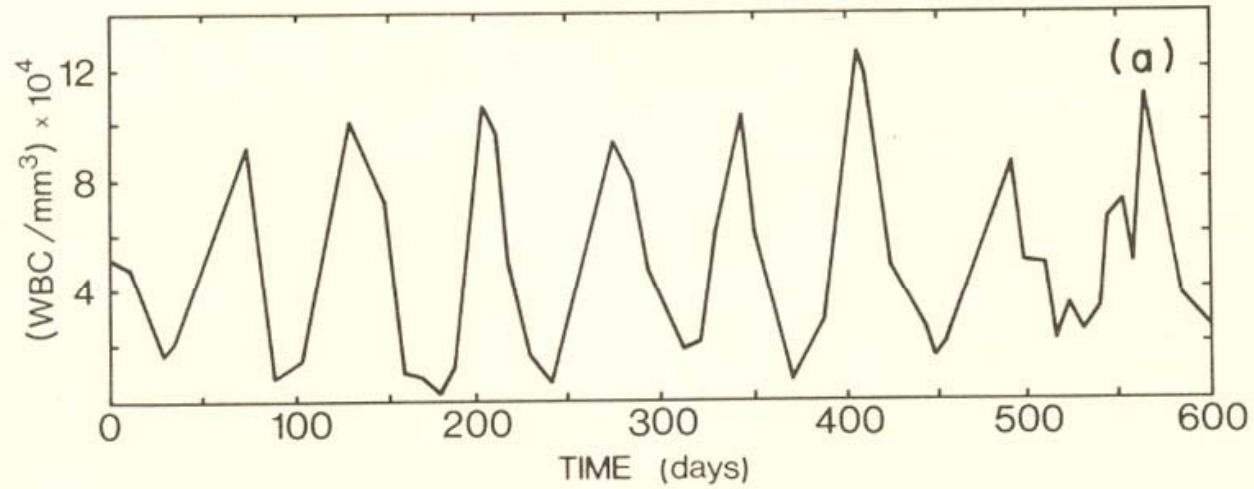
School of Science and Engineering

LUMS, Lahore

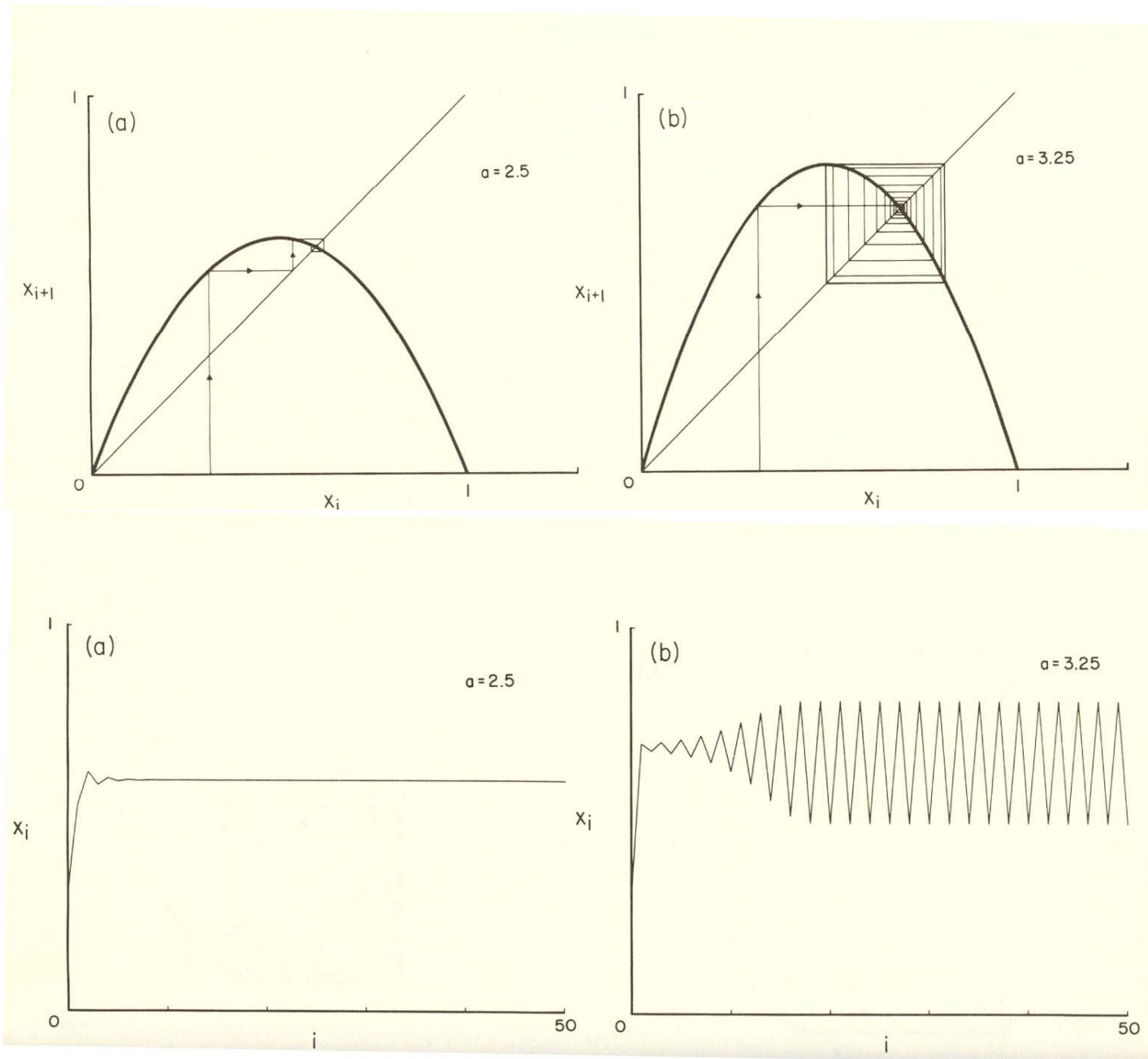
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Physiology Class, 9 December 2009

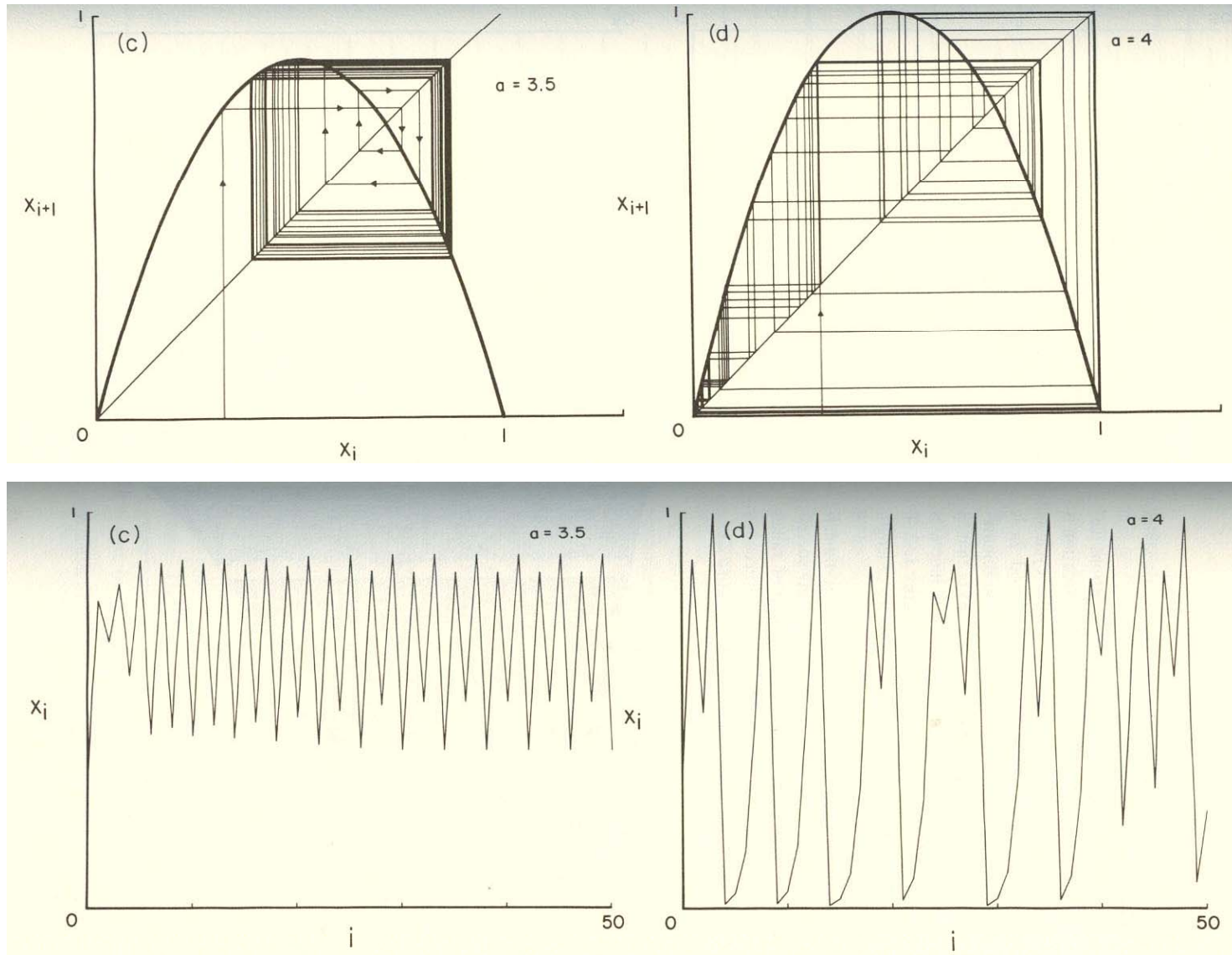
Rhythms of Life



Mathematical Basis of Biological Rhythms

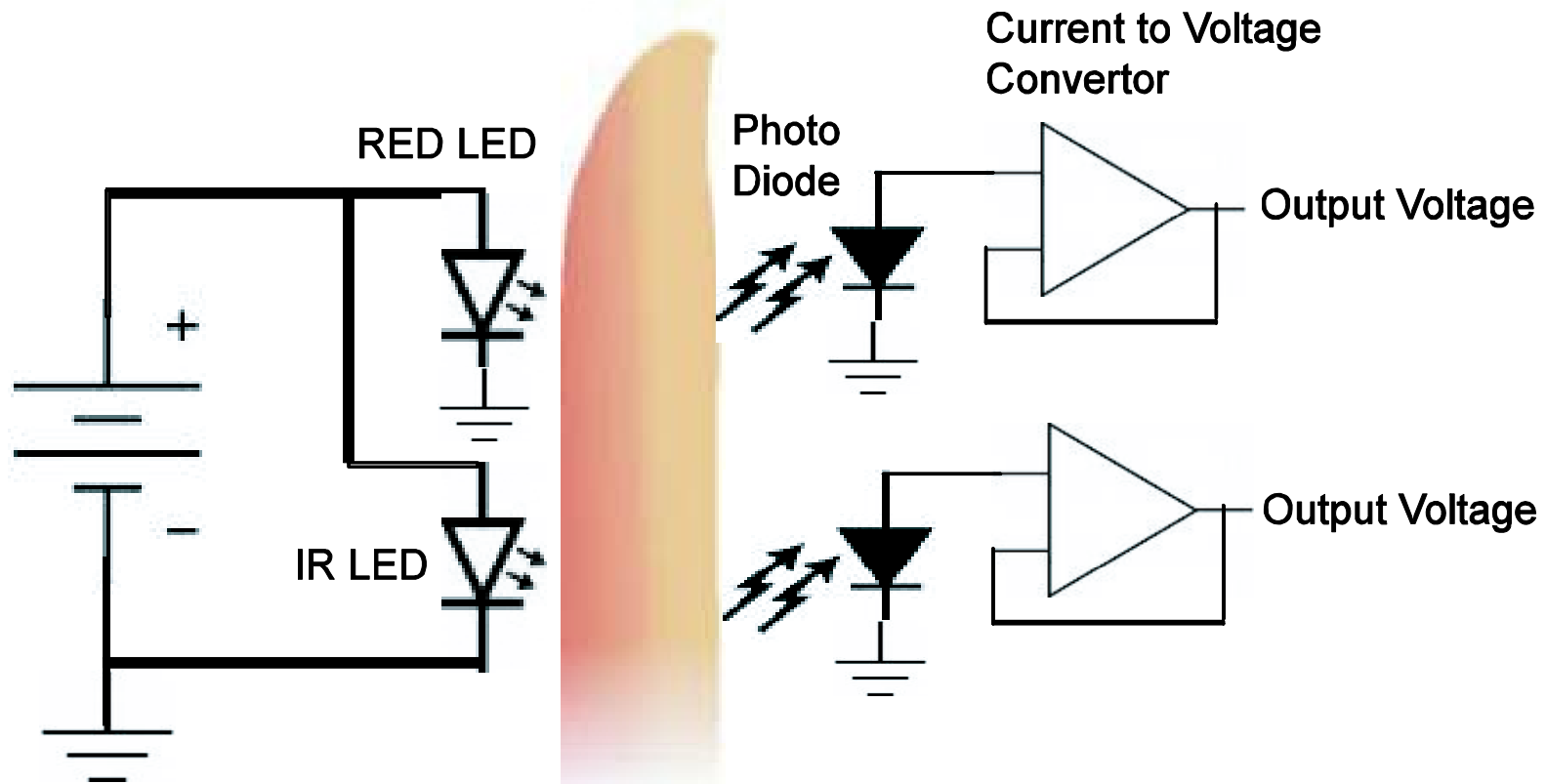


Transition into Chaos



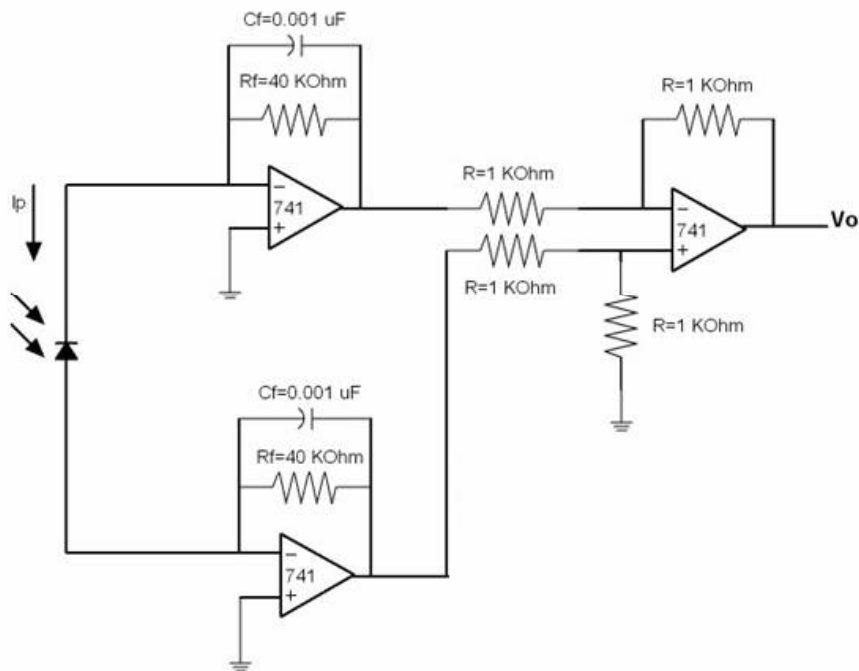
Source: From Clocks to Chaos by L. Glaser, M.C. Mackey

Pulse Oximetry Block Diagram

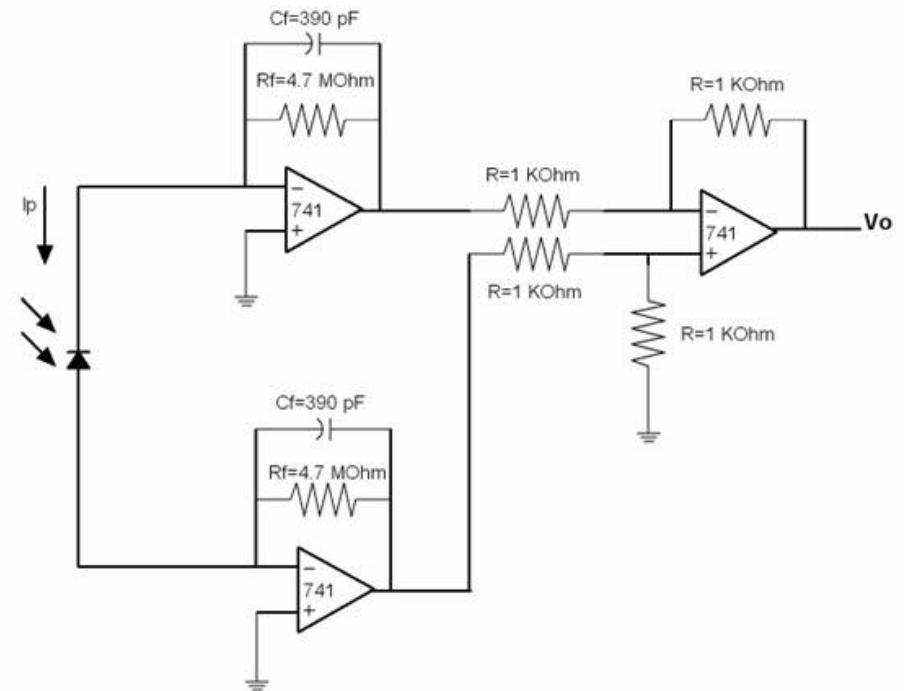


Pulse Oximetry Amplifiers

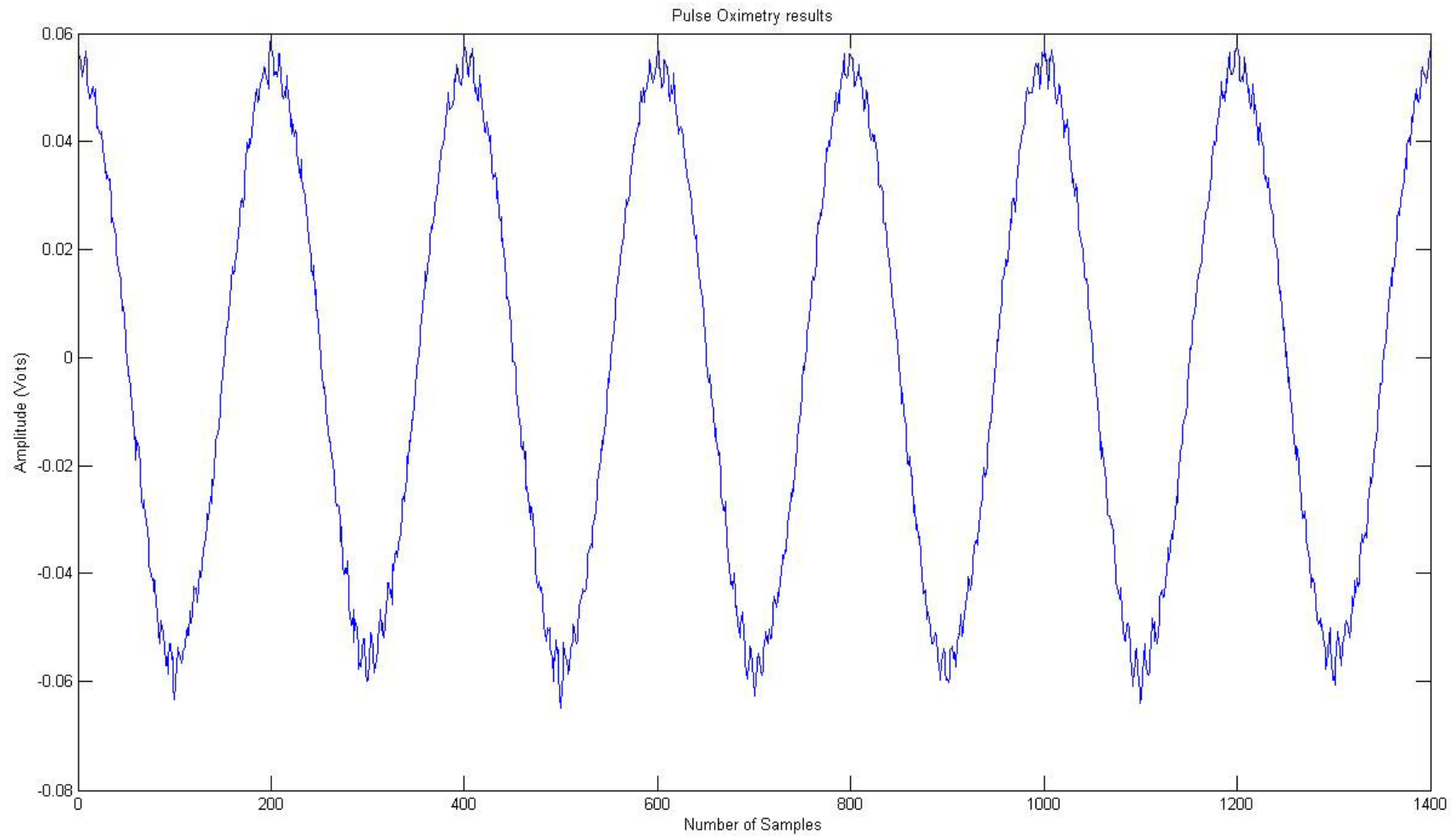
Infrared Photodiode Transimpedance Amplification Circuit



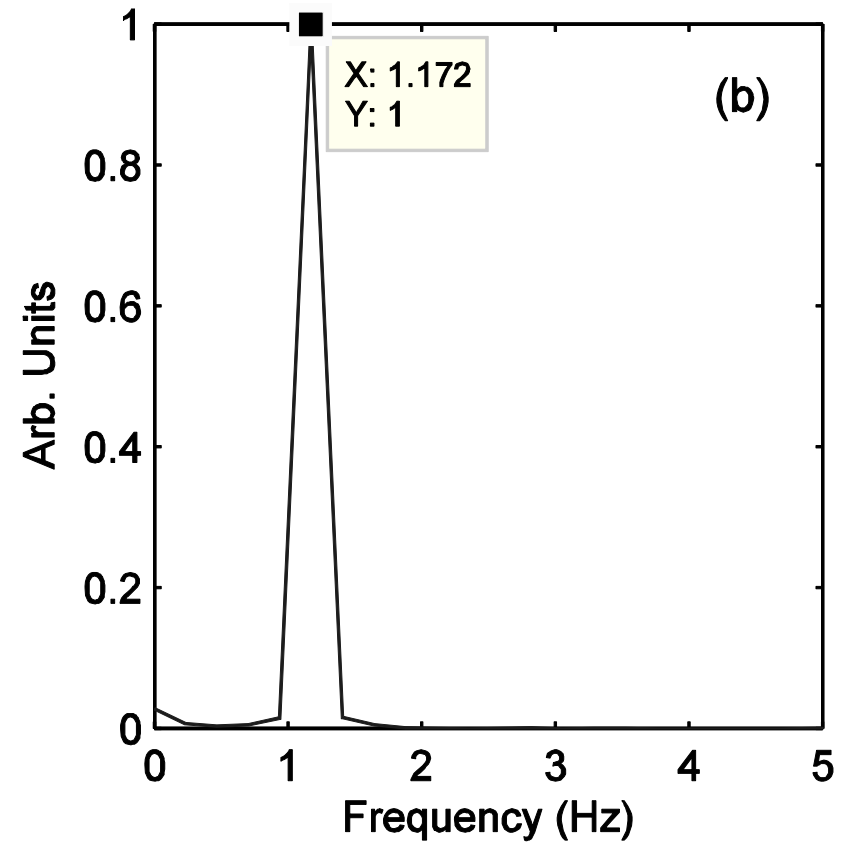
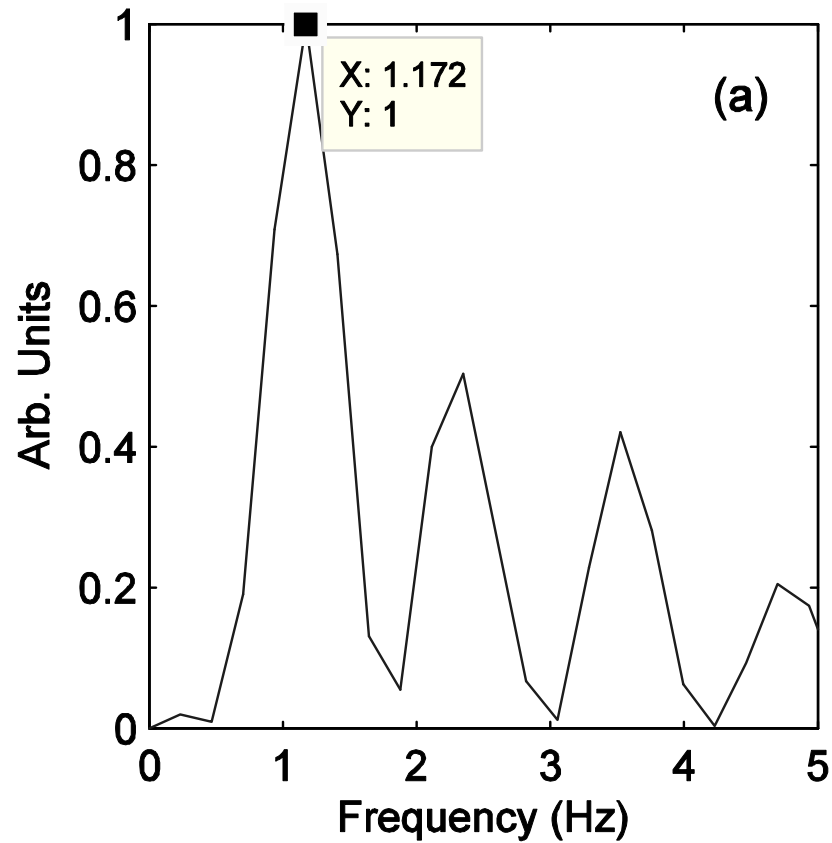
Red Photodiode Transimpedance Amplification Circuit



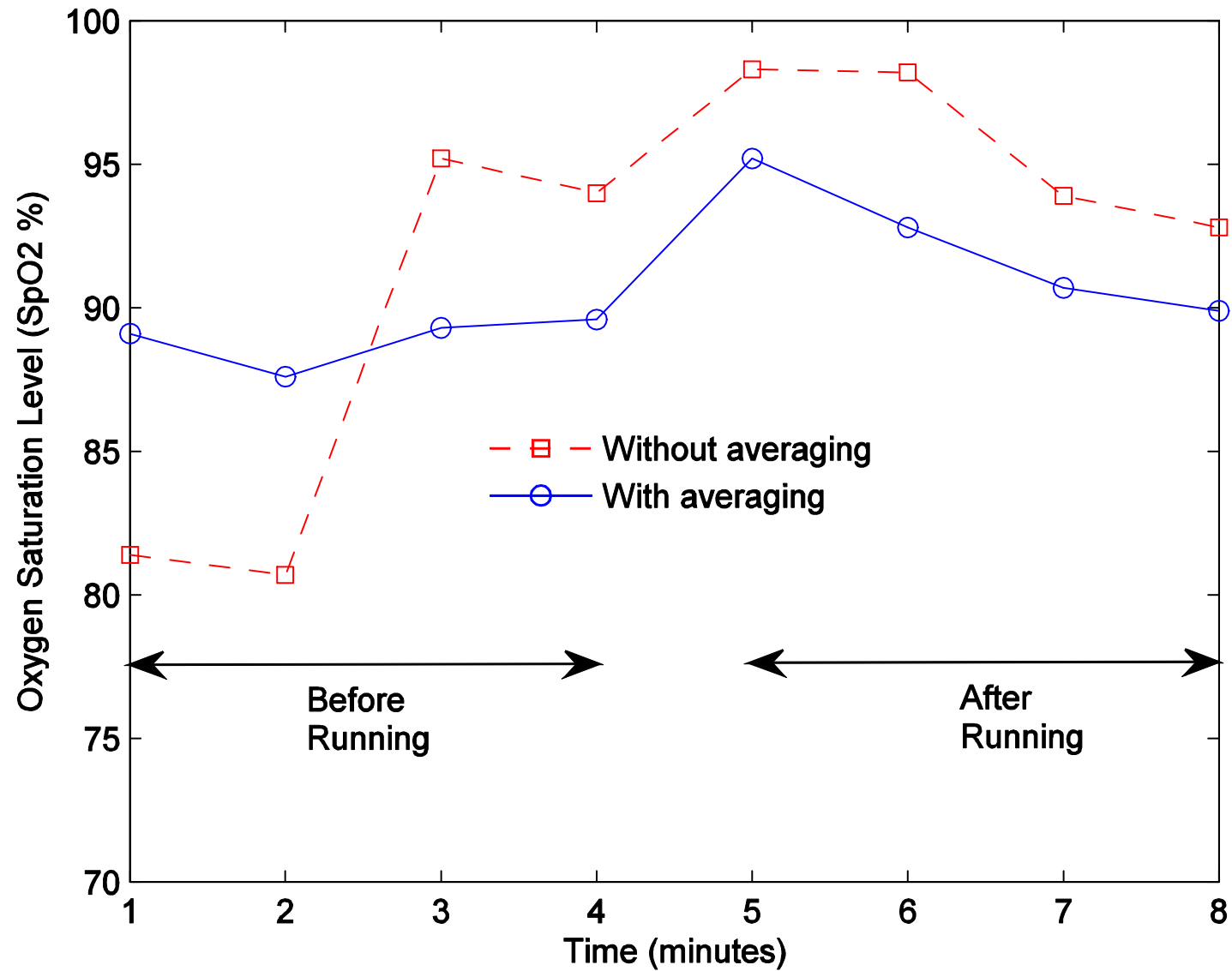
Pulse Oximetry Signal



Frequency Spectrum of the Pulse Oximetry Signal

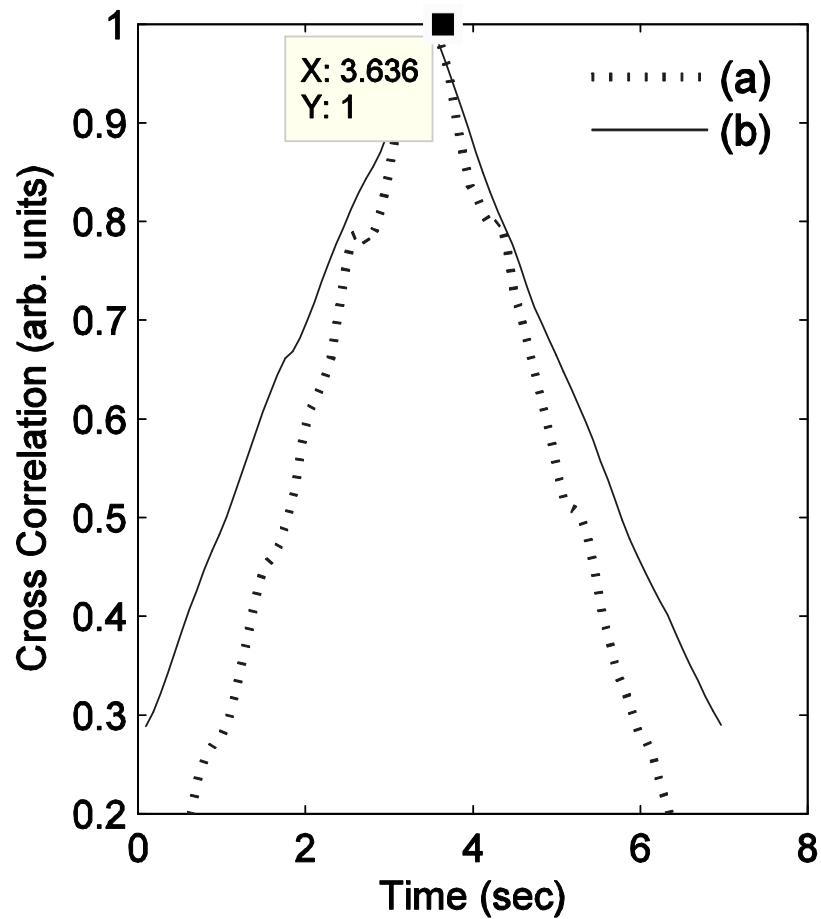


Oxygen Levels in the Blood

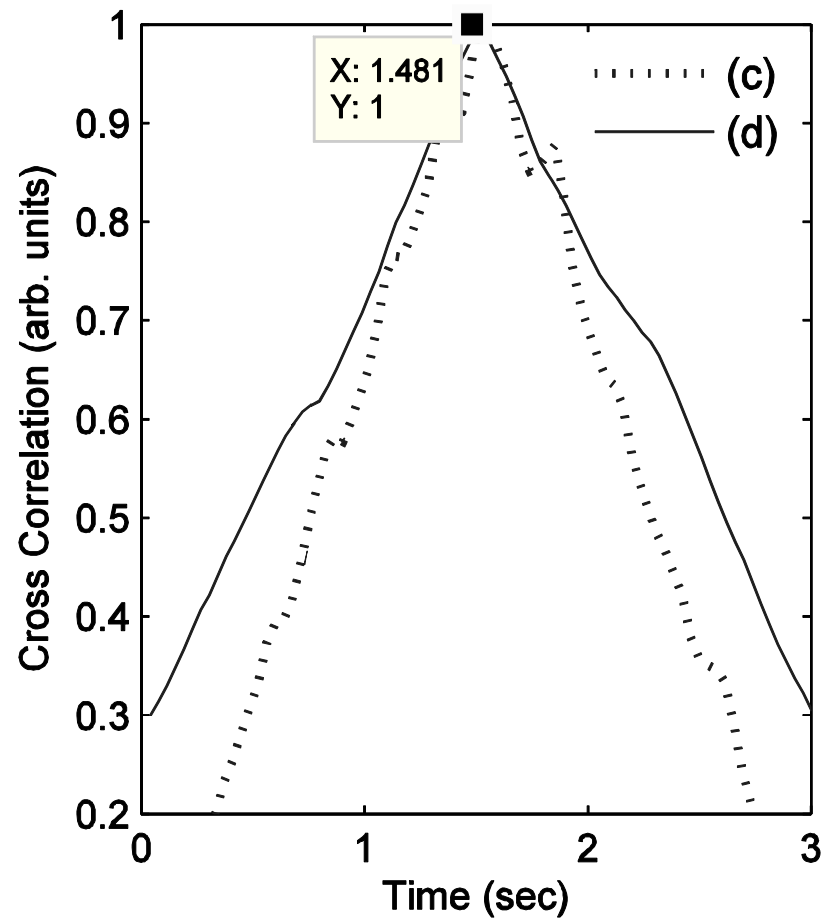


Estimating Speed of Blood Flow

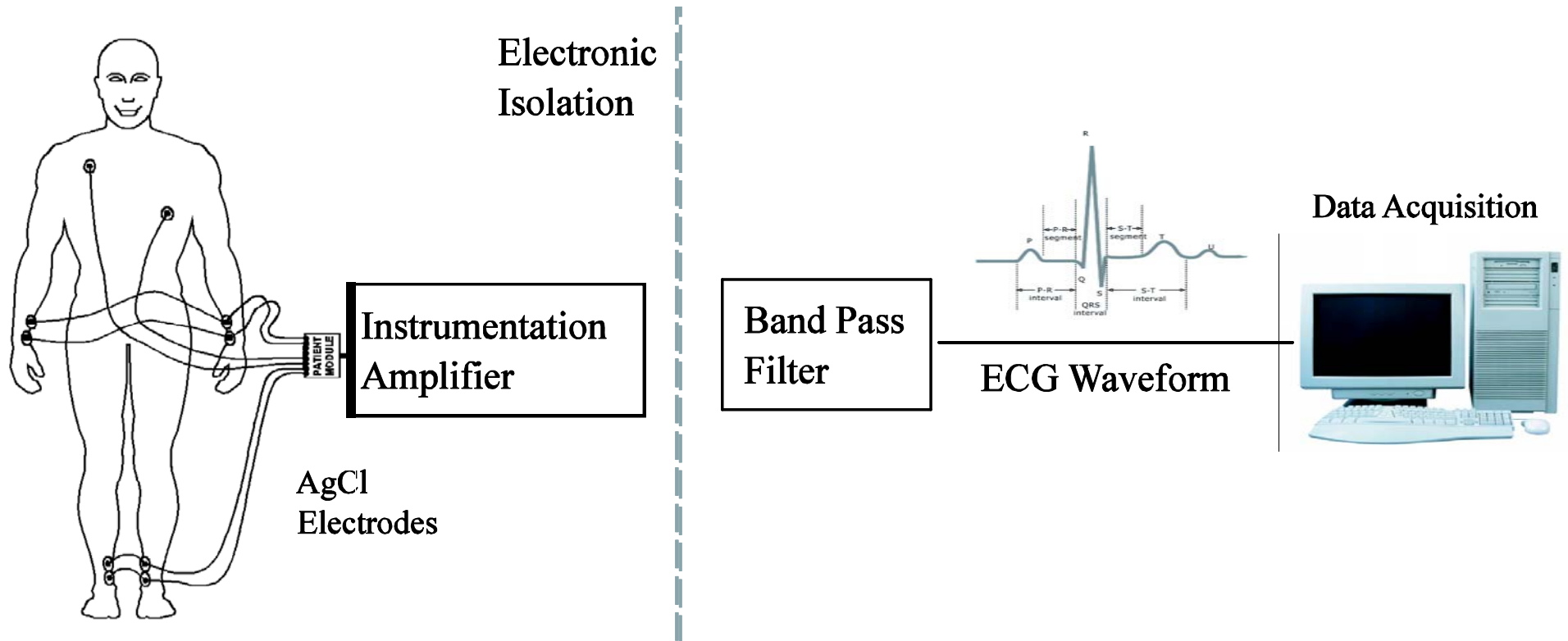
Before running



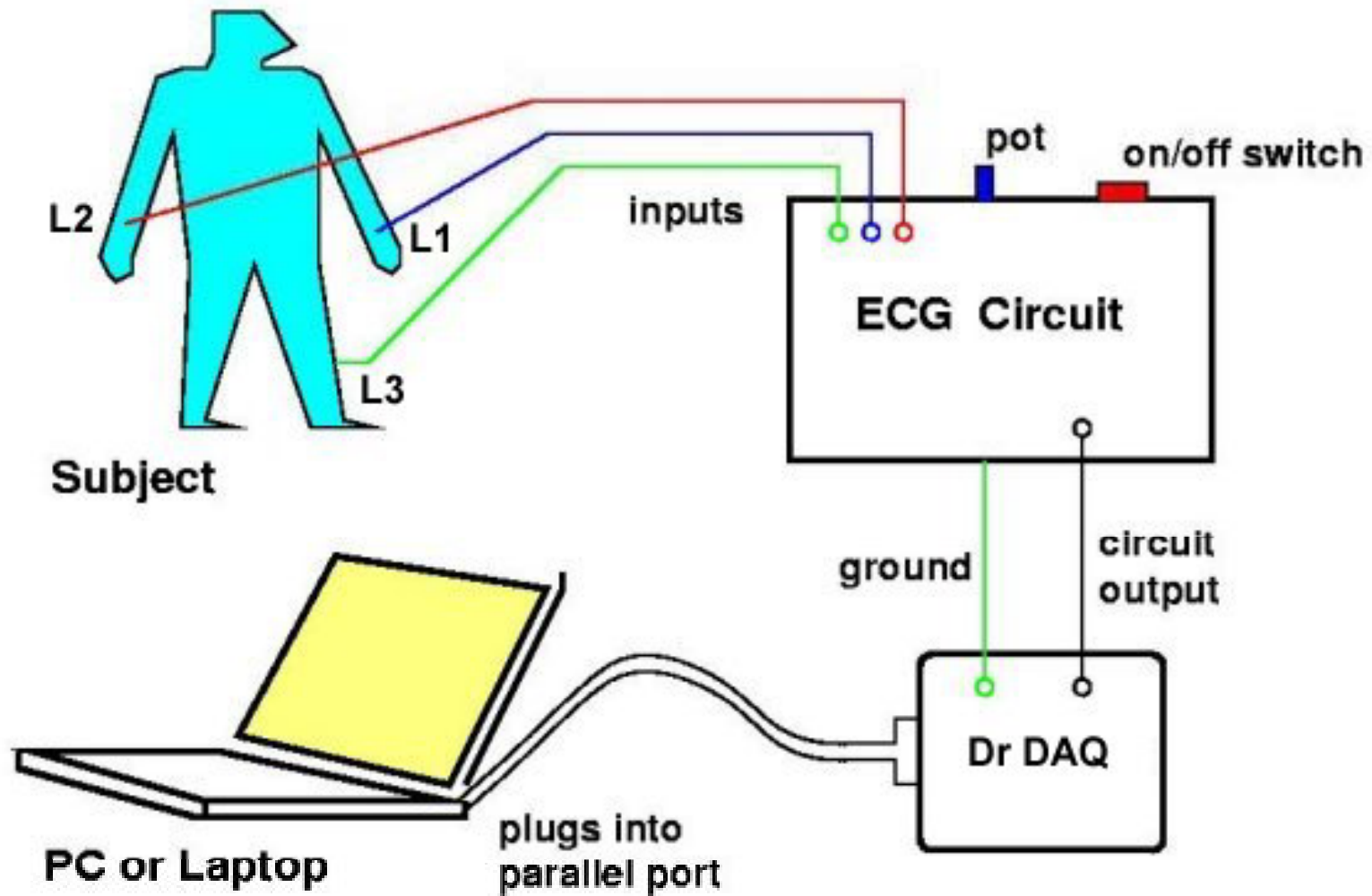
After running



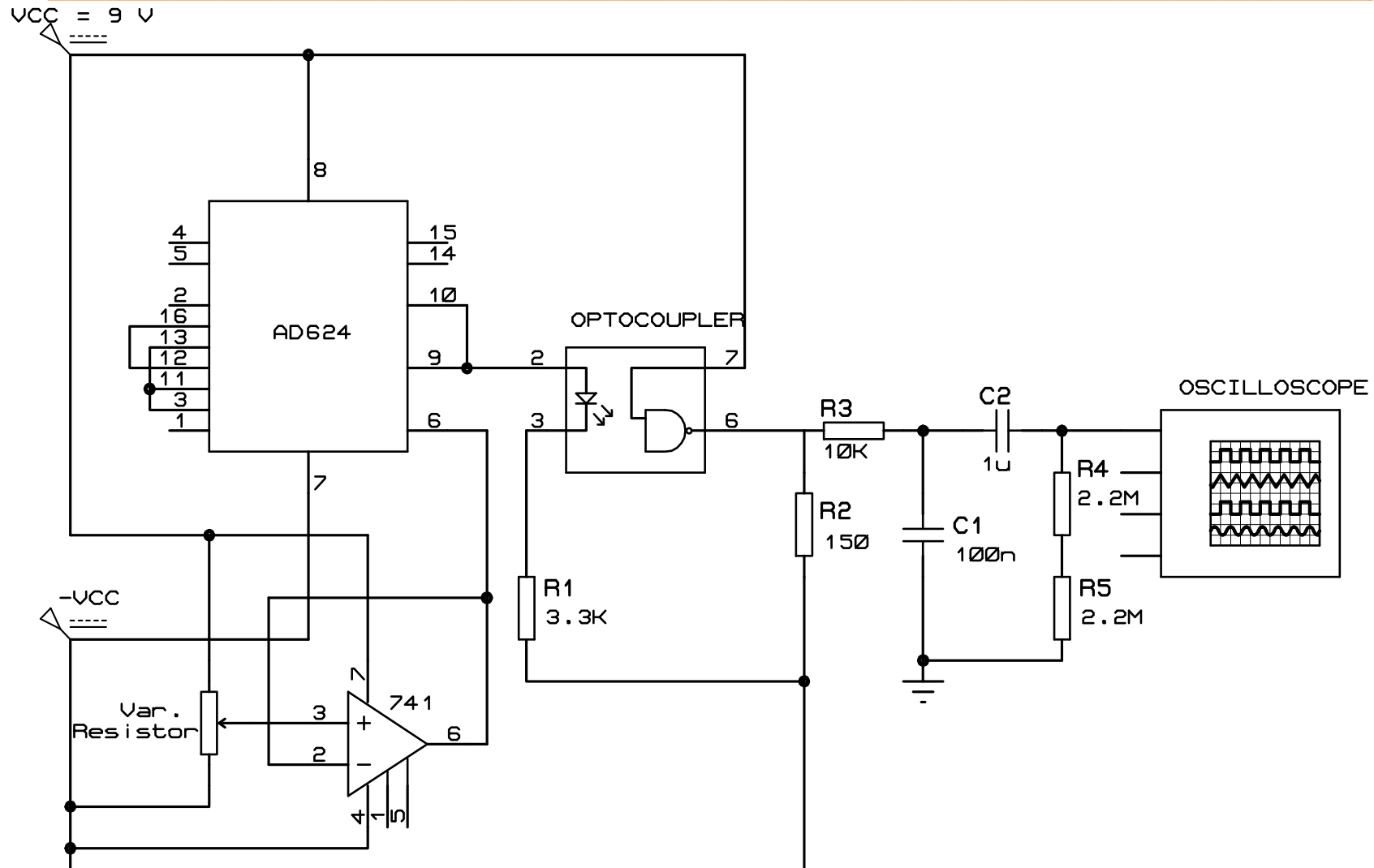
ECG Experimental Setup



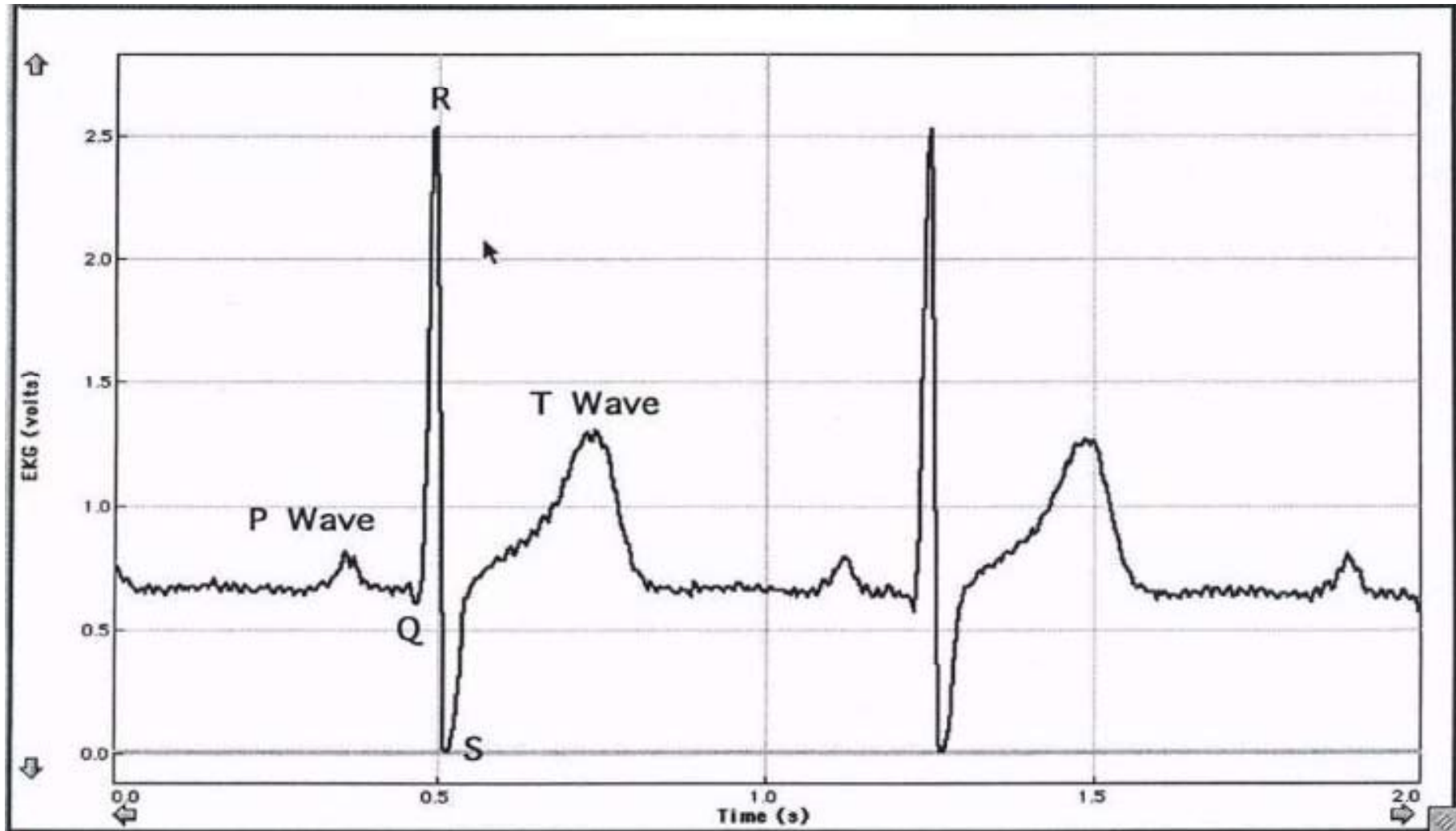
Eithoven Triangle



ECG Detection and Amplification Circuit



Typical ECG Waveform



ECG Signal Waveform

