1163-92-1239   **Jan Poleszczuk***, Ks. Trojdena 4 street, 02109 Warsaw, Poland. *Computational modeling of pulse wave propagation: how mathematical model calibrated with pulse wave recording can be used to assess the state of patient's cardiovascular system.*

Cardiovascular (CV) diseases are the leading cause of death worldwide. Therefore, there is a constant demand for more accurate and non-invasive methods for cardiovascular system state assessment. Therefore, we focused on developing a mathematical model which, after calibration with patient-specific data, would provide new personalized information about CV system state.

To this extent, we model the blood transport in a bifurcating binary tree of fifty-five larger systemic arteries in which individual vessels are axisymmetric elastic cylinders tapering along their length. We describe spatiotemporal changes in the cross-sectional area of the artery (equivalently blood pressure) and blood flow using an 1D approach.

Proposed model was confronted with the actual recordings of the blood pressures in the peripheral arteries collected in a group of healthy individuals and hemodialysis patients. We show that, after parameter estimation procedure, the model is able to provide new patient-specific insights into CV system state that are unattainable with existing non-invasive methods. (Received September 15, 2020)