Abstract Submitted
for the NWS18 Meeting of
The American Physical Society

A Study on the Cardio-mechanics to Detect the Behavior of Biofluid in the Transvalvular System KI JUNG KIM, JAEHYUK LIM, JEONG HWAN LEE, Choice Research Group — In this paper, appropriate biofluid dynamic principles of heart mechanisms were applied to understand the effects; Continuity equation, Bernoullis Principle, and Gorlin Equation were used to acquire values that measure the degree of change caused by stenosis on the heart. The purpose of this study is to create a web application using computer programing to detect the behavior of biofluid in the transvalvular system. A web application program created in Javascript, has been adapted to the website to aid users to determine if one has cardiovascular disease; specifically aortic stenosis. In addition, the application shows the physical effects of aortic valve stenosis on the human heart, as well as to link the progression of aortic valve stenosis to the homeostatic mechanisms and sensitivity of the heart. In order to support our hypothesis, several biofluid dynamics-based laws and equations were applied in an attempt to computationally and mathematically prove the role that pressure may have on the system, observing for both significant reactions caused by drastic pressure changes and possible correlations with pressure and other fluid dynamic-related properties.

Richard Kyung
Choice Research Group

Date submitted: 17 May 2018 Electronic form version 1.4