

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Non-monotonic wave dispersion in one-dimensional spiral track of cardiac cells** TAE YUN KIM, OKYU KWON, KYOUNG J. LEE, Center for Cell Dynamics and Department of Physics, Korea University — Alternans, periodic cardiac beat-to-beat alternation, is an important precursor to cardiac fibrillation. The underlying mechanism for this phenomenon has been discussed mostly based on the electro-chemical kinetics of constituent cells (myocytes) that comprise the heart system. An important unexplored aspect of this phenomenon is the role of wave dispersion that reflects the cell-to-cell coupling as well as the local kinetic properties. A recent modeling study in fact suggests that a non-monotonic wave dispersion can be a source for alternans. We have designed and built very long ( $\sim 15$  cm) in vitro quasi-one dimensional tracks of rat ventricular cells for elucidating the instability responsible for the transition to alternans. One dimensional tracks are favorable, since it excludes the effect of local wave curvature. Systematic investigations based on S1-S2 stimulation protocols are carried out and here we present some preliminary evidence of non-monotonicity in cardiac wave dispersion.

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Date submitted: 18 Nov 2008

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