



MARQUETTE
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HELEN WAY KLINGLER
COLLEGE OF ARTS AND SCIENCES

Department of Mathematics, Statistics and Computer Science

COLLOQUIUM ANNOUNCEMENT

A Kolmogorov-Smirnov Based Test using FFT to Evaluate Electrode-tissue Contact Force

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2:00 PM, Friday November 16, 2018

Cudahy Hall, Room 401

Abstract

In this CSSRFP summary project, my research focuses on how to identify the contact force level during cardiac catheter ablation. As an important reference for the physician during catheter ablation, the electrode-tissue contact force is one of the key points for the success of the catheter ablation. With the guide of contact force sensing, the ablation procedure can be much safer and more efficient. Techniques and apparatus have been refined since catheter ablation was invented to treat cardiac arrhythmia. In my summer research, the electrograms (EGM's) collected from the distal electrode of the ablation catheter and the proximal electrode of the coronary catheter are examined from the spectral perspective to explore the relation of the contact force and EGM's characteristics. Fast Fourier transform (FFT) is used to process the signal of the time domain, in the study, it can be found that there is a strong correlation between spectral similarity and contact force. Kolmogorov-Smirnov test (KS-test) is applied to determine if the two datasets differ significantly, further to identify the strength of the contact force. EGM is one of the features can be used to identify the contact force level, there are also other characteristics can be added into the evaluating system to make contact force prediction more efficient, but in this summary, I will focus on talking about how to identify the contact force level based on FFT comparison using the KS test.

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For further information: see <http://www.marquette.edu/mcs/resources-colloquium.shtml>

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CUDAHY HALL, ROOM 342 AT 3:00 P.M.*