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ACTIVATION PATTERN PERMUTATION COMPUTED TOMOGRAPHY OF CARDIAC CONDUCTION

DIAGNOSTICS

Electrophysiology mapping system used to determine longitudinal and transverse conduction velocities within myocardial tissue to provide a map of diseased cardiac tissue.

TECHNOLOGY TYPE

Instrumentation
Cardiology

STAGE OF DEVELOPMENT

- Proof of concept demonstrated with simulated and clinical data.
- Ongoing work to refine reconstruction algorithms and processing signal.

IP PROTECTION

U.S. Utility Patent Pending

Systems and Methods for
Characterizing the
Conductive Properties
of the Heart
US20170027465A1

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Reference Number: U-5950

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TECHNOLOGY SUMMARY

Sudden cardiac death is often associated with arrhythmia, which affects over three million people each year in the United States. These patients are at increased risk of stroke, heart attack, heart failure, and sudden cardiac death. Risk of developing an arrhythmia can be determined through the identification of cardiac conduction abnormalities, but that method falls short of monitoring the health of the cardiac tissue itself.

Measuring the conduction velocity of electrical impulses through heart tissue determines the health of that tissue. A standard clinical loop catheter is used to extract longitudinal and transverse conduction velocities. These velocities are indicative of various disease states, providing clinicians with the exact location of diseased tissue to improve patient treatment plans. A map of where the diseased tissue resides in the heart is generated for reference during the procedures, enhancing the treatment of heart defects, such as atrial fibrillation.

FEATURES AND BENEFITS

- Facilitates measurement of cardiac tissue properties.
- Provides a treatment guide for cardiac arrhythmias.
- Improves patient outcomes by identifying diseased cardiac tissue through conduction velocity discrepancies.

RECENT PUBLICATIONS

Blauer, J.J., Han, F., Ranjan, R., Marrouche, N.F., MacLeod, R.S. (2014). Controlled activation for interrogation of the electrophysiological substrate. *Computing in Cardiology*. Sep 9; 2014: 189-192.

INVENTOR PROFILE

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DATE UPDATED: 7/17/2018