

Transforming Cardiac Care with Quantum Precision

Cardiovascular diseases are the leading cause of death globally, often due to delayed or inadequate diagnosis. Traditional cardiac diagnostic tools have specific limitations that reduce their effectiveness for early detection and continuous monitoring. ECG lacks the sensitivity to detect subtle electrical abnormalities, echocardiography misses early electrophysiological changes, and angiography is detailed but invasive and expensive, limiting its routine use. Quantum magnetometers offer a transformative, non-invasive alternative by detecting the heart's weak magnetic fields with femtotesla precision. We present our development of a highly sensitive quantum magnetometer for magnetocardiography (MCG) applications, leveraging atomic physics, laser optics, and quantum coherence to produce high-resolution cardiac magnetic field maps. This compact, portable system enables early detection, risk stratification, and real-time cardiac monitoring. Integrated with AI analytics and cloud connectivity, our quantum sensing platform redefines cardiac diagnostics—bringing high-precision care to the point of need.