

HARMONIC AND SPECTRAL ANALYSIS

International Zoom Conference

October 4–6, 2023

The Fundamental Theorem of Trigonometry

And Archimedes Angle Measure

ERIC GRINBERG

University of Massachusetts Boston

(joint work with OMAR HIJAB)

The concept of angle measure is foundational yet surprisingly little featured in elementary treatments. We develop it along lines implicit in Archimedes' work and show how it leads to the notion of complex numbers and the fundamental theorem of trigonometry. Thus these concepts join the integers and the completeness of the real numbers in having ancient roots.