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**The mridangam: A Study of the history and acoustics of an
ancient South Indian drum**

Rohan Krishnamurthy^a, Ian Hempe^b and James Cottingham^b

^aKalamazoo College, 544 Sunrise Circle, Kalamazoo, MI 49009, USA

^bCoe College, 1220 First Avenue NE, Cedar Rapids, IA 52402, USA

The acoustical properties of the South Indian drum, the mridangam, were studied. The barrel-shaped mridangam has been described in ancient Hindu scriptures and depicted in cave paintings and temple sculptures. With a claimed antiquity dating back to the Vedic period, it is the principal percussion instrument in South Indian classical music and dance and possesses unique tonal properties. The mridangam is comprised of three primary parts: The tonal head (valanthalai), the bass head (thoppi), and the central shell (kattai), to which the two heads are traditionally fastened by leather rope. Measurements of modes and mode frequencies were made on traditional drums, as well as on drums where the heads were remounted using a new and user-friendly design. Measurements of drumhead vibration and sound spectra were also made when the drumhead was excited by a skilled player using standard strokes. The frequencies of the first few modes of the tonal head were found, as expected, to be tuned approximately harmonic. Practical performance variables, including effects of altering mounting tension and coupling between the drumheads, were also studied. Results from the study will be followed by a practical demonstration of the instrument.