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**Measuring High-Resolution Directivity Patterns of Musical Instruments** JOSHUA BODON, TIMOTHY LEISHMAN, Brigham Young University, DANIEL SLOSKY, Northern Arizona University — The directivity of a sound source describes its directional radiation characteristics. If the source is not simple, analytical predictions of directivity are very difficult. For complex sources, such as musical instruments, measuring directivity is often the simplest solution. However, several challenges arise when taking these measurements with sufficient quality and resolution. These include problems with assuring repeatability and consistent measurement conditions. Accordingly, musical instrument directivity measurement systems have implemented only simple schemes and have generated low-resolution results. The research reported in this presentation involves the development and use of a measurement system in an anechoic chamber with 5 degree angular resolution (the highest resolution reported to date). Musical data for eight musical instruments have been recorded and both polar and balloon plots of directivity have been generated for the first five harmonics of every note of each instrument. Spherical near-field acoustical holography will be applied to collected data to produce sliced 3D solid balloon plots for directivity data at any radius beyond a minimum sphere, adding a third dimension to the directivity data.

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