

ACOUSTICS2008/2177
Secondary source distribution effect on active noise control
robustness

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Arrangement of secondary sources and microphones play an important role in effectiveness and robustness of any active noise control (ANC) system. This paper concerns effective distribution of secondary sources for a typical ANC system so that provides a robust and acceptable level of noise reduction for different types of primary source, namely monopole, dipole and multipole, radiating at 100Hz and 250Hz. Two sets of secondary sources are considered here: planar distribution, and dome-type distribution. Results have shown that utilization of planar distribution model leads to more effective and stable noise reduction for most of the cases, while using a dome-type set of secondary sources is not able to effectively reduce noise from dipole and multipole primary sources. In addition, it was found that implementation of dome-type arrangement is more difficult than the planar distribution and is also very likely to become unstable for some particular source arrangements (i.e. or mathematically ill-conditioned).