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**Numerical study of the influence of temperature and microjets on
the radiated noise for a subsonic jet**

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Jet noise remains the principal nuisance source for an aircraft at take-off conditions. A previous work [1] showed that using micro-jets could be effective to modify the turbulence development and thus decrease the radiated pressure. This micro-jets effect is numerically studied for two jets. LES simulations of a cold ($M = 0.9$) and a hot ($M = 0.636$) jets, with and without micro-jets, are computed and the acoustic post-processing is performed using the Ffowcs-Williams and Hawkings surface formulation. The temperature effect on the noise is analyzed for the reference computations and, with micro-jets, the noise reduction is compared to measurements for a similar configuration [1]. Aerodynamic comparisons with experiments give a good comparison, excepted a too short potential core and overestimated turbulent kinetic energy. The noise decrease with the higher temperature and the modifications of the spectral densities are well captured by the simulations. The micro-jets provide a reduction up to more than 2dB for the best angles. Turbulence modification is still under investigation and results will be presented.

[1] Castelain, T., Béra, J., Sunyach, M., and Juvé, D., “ Effect of microjets on a high-subsonic jet. Parametric study of far-field noise reduction ”, 12th AIAA/CEAS Aeroacoustics Conference (2006).