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Overview of turbofans noise prediction methods based on CFD
computations

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Overview of turbofans noise prediction methods based on CFD computations The constant trend to increase bypass ratio in turbofan aircraft engines has led to an increase of the relative contribution of rotors to the overall engine noise. There is therefore a need for efficient and accurate prediction tools to achieve a silent design of the rotor components.

Here is given an overview of the different aeroacoustic methods investigated by Snecma and used for prediction of tone interaction noise, broadband interaction noise and broadband fan self noise. Different levels of methods refinement, from various analytical models to steady and unsteady CFD, will be compared in terms of accuracy of prediction and computational cost. Examples of implementation of these methods on conventional turbofan and counter-rotating fan configurations will be presented.