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Synthetic jet modeling for flow control applications

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Author: Ferlauto, M.

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Abstract: A numerical model of synthetic jet actuator, suitable for flow control simulations, is presented. The controlled flowfield is simulated by a standard CFD method for compressible RANS equations, while flow inside the actuator is reduced to a one-dimensional piston flow. The nonlinear matching between the two systems ensures conservation of the mass, momentum and energy.