

## Low Velocity Flows



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### **A low Mach correction for the Godunov scheme applied to the linear wave equation with porosity**

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We study the low Mach number behavior of the Godunov finite volume scheme applied to the linear wave equation with porosity. More precisely, we extend the Hodge decomposition to a weighted  $L^2$  space. We illustrate the influence of the cell geometry on the accuracy property at low Mach number. In the triangular case, the stationary space of the Godunov scheme approaches well enough the continuous space of constant pressure and divergent-free velocity while this is not the case in the cartesian case. We study the properties of the modified equation associated to this Godunov scheme and we propose some correction that is continuous with respect to the Mach number.

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