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Numerical study of the impact of a drop containing a bubble YU WEI, MARIE-JEAN THORAVAL, Xi'an Jiaotong University — The impact of a drop has many applications from inkjet printing to the spreading of crops diseases. This fundamental phenomenon has therefore attracted a lot of interest from different fields. However, they have mostly focused on the simplest case of a drop containing a single fluid. In inkjet printing and in the deposition process of thermal barrier coatings, some bubbles can be present in the drop when it impacts on the solid surface. The presence of the bubble can produce some additional splashing, and affect the quality of the deposited material. Only a few studies have looked at this problem, and many questions still need to be investigated. Generally, there are three possibilities when a drop containing a bubble impacts onto a solid surface, namely the bubble stays in drop, the bubble bursts and a counter jet forms. We have performed axisymmetric numerical simulations with the open source code Gerris to study this vertical jet. We have systematically varied several parameters, including the impact velocity, the bubble size, the vertical position of the bubble, and the liquid properties. We were thus able to characterize under which condition the bubble leads to splashing and the velocity of the produced jet.

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