Abstract Submitted
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Virus transmission: sensitivity study of the Nasal/Buccal Geometries and Saliva Properties.[1] DOUGLAS FONTES, MICHAEL KINZEL, University of Central Florida — The present work presents a sensitivity study of different geometries and fluid properties in the context of a sneeze to understand how these parameters drive virus transmission. This work aims to bring more comprehension of the mechanisms behind the transmission of viruses, such as the COVID-19, that was responsible for several deaths around the world. Numerical simulations, based on four geometrical conditions for nasal and buccal passages and three saliva properties, represent sneeze events using typical regimes and conditions. The numerical domain consists of a human body, with simplified geometry of throat, buccal and nasal passages. This geometry considers four different exit conditions: teeth and nasal passage open; without teeth and nasal passage open; without teeth and nasal passage closed and; teeth and nasal passage closed. Besides this, the physical properties of saliva were evaluated at three conditions: thinner saliva, standard saliva, and thicker saliva. The results showed that the spray formation characteristics are highly dependent on small geometrical changes and. In terms of fluid properties, the thicker saliva presented a reduction of at least twice in the number of droplets compared to the thinner saliva.

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