

Quantifying the role of a facial mask



Medical Challenge

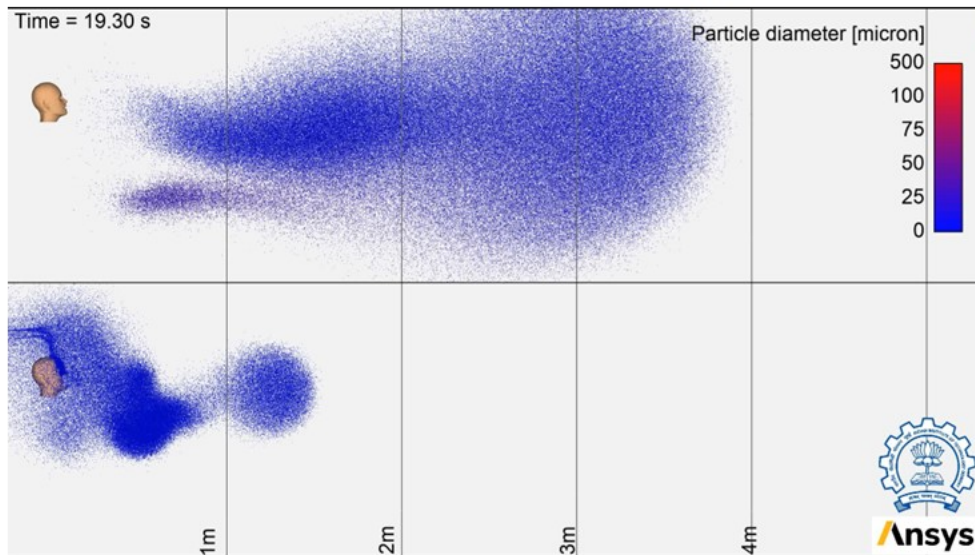
- Scientifically demonstrating the role of facial mask
- Optimizing the mask by varying parameters
- Validating the role of the mask for various situations

In Silico Solution

- Computer model including the porosity of the mask and the size of the droplet exhale by the patient
- Maximum propagation of the aerosols depending upon the conditions
- Parametric analysis to adjust the size of the porosity

Policy Relevance

- Visual illustration of the role of the facial mask
- Quantitative criteria to assess the impact of the mask
- Time and cost effective tools to encourage new designs and measure their performance



- When a mask is worn, most of the virus-laden droplets (nearly 70%) are deposited on the mask.
- Without a mask a dilute suspended cloud is observed over 2 – 5 m.
- Our results strongly suggest that airborne transmission from patients can be greatly reduced by wearing a simple mask and maintaining strict physical distancing of 2 m.

<https://arxiv.org/ftp/arxiv/papers/2005/2005.03444.pdf>