Airborne
Transmission of
Covid-19

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The Concept

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▶ Covid 19 virus reported to the World Health Organization
(WHO) on December 31, 2019.

▶ Reduce/Prevent its spread

▶ Cemosis and Synapse-Concept project 4fastsim-ibat.

▶ Air quality since Covid-19.

Collaboration Cemosis/Synapse

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- ▶ Cemosis created in January 2013 by Christophe Prud'homme.
- ▶ Strasbourg Centre for Modelling and Simulation.
- ▶ Synapse-Concept created in November 1999.
- ▶ Specialised in engineering and technical studies.

Project

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- ▶ Study of the airborne transmission of COVID-19 in an indoor space.
- ▶ The air in the room follows an advection-diffusion-reaction equation.
- ▶ With only one infectious person in the room.
- ▶ Rome of size $8m(l) \times 8m(w) \times 3m(h)$.
- ▶ Breathing/Talking with and without a face mask.

Methodology

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- ▶ Firstly, 2D model to study/reproduce the concentration of airborne infectious particles.
- ▶ Using the advection–reaction–diffusion equation.
- ▶ Secondly, using «N-point ASOM» (air supply opening model).

The Tools

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- ▶ Feel++ to solve advection–reaction–diffusion equation.
- ▶ Paraview to visualize the solution.
- ▶ Antora to generate the documentation site.
- ▶ Visual Studio Code.

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