A mixture-like model for tumor-immune system interactions

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In this talk, we introduce a mathematical model based on mixture theory intended to describe the tumor-immune system interactions within the tumor microenvironment. The equations account for the geometry of the tumor expansion, and the displacement of the immune cells, driven by diffusion and chemotactic mechanisms. They also take into account the constraints in terms of nutrient and oxygen supply.

Théorème 1. *The numerical investigations analyze the impact of the different modeling assumptions and parameters. Depending on the parameters, the model can reproduce elimination, equilibrium or escape phases and it identifies a critical role of oxygen/nutrient supply in shaping the tumor growth. In addition, antitumor immune cells are key factors in controlling tumor growth, maintaining an equilibrium while protumor cells favor escape and tumor expansion.*

see more in [1].

[1] C. Tayou, S. Girel, F. Anjuère, V. Braud, F. Hubert, T. Goudon. *A mixture-like model for tumor-immune system interactions.* J. Theor. Biol. (submitted), **36**, 2023.

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