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Front Propagation Through a Perforated Wall

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In recent years, the behavior of solution fronts of reaction-diffusion equations in the presence of obstacles has attracted attention among many researchers.

In this talk, I will consider the case where the obstacle is a wall with many holes and discuss whether the front can pass through the wall and continue to propagate ("propagation") or is blocked by the wall ("blocking"). The answer depends largely on the size and the geometric configuration of the holes.

This problem has led to a variety of interesting mathematical questions that are far richer than we had originally anticipated. Many questions still remain open. This is joint work with Henri Berestycki and Francois Hamel.