Fluctuations of the front in a one-dimensional model for the spread of an infection

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We consider the following infection model for particles studied by Kesten and Sidoravicius corresponding to the reaction $X + Y \rightarrow 2X$ on the integer lattice in which X and Y particles move as simple continuous time random walks with the same jump rate: upon contact with an X particle, a Y particle instantaneously becomes X. This model can be interpreted as an infection process, where X and Y particles represent ill and healthy individuals respectively. If initially there are only X particles towards the right and Y particles towards the left, we call the position of the rightmost X particle, the position of the front. For a product Poisson initial condition we construct a renewal structure for the process and prove a central limit theorem for the centered position of the front as time $t \rightarrow \infty$. This is a joint work with Jean Bérard.

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