1145-35-779   **Alex A. Himonas**, **Dionyssios Mantzavinos*** (`mantzavinos@ku.edu`) and **Fangchi Yan**.
Initial-Boundary Value Problems for the Reaction-Diffusion Equation.

The reaction-diffusion equation supplemented with Dirichlet boundary conditions either on the half-line or on a finite interval is shown to be locally well-posed in the sense of Hadamard for data in Sobolev spaces H^s. In both domains, the proof takes advantage of a novel solution formula for the forced linear heat equation obtained via the unified transform method of Fokas. This formula provides the basis for setting up a Picard iteration scheme for the nonlinear problem and for establishing the various linear estimates required for showing local well-posedness via a contraction mapping argument. In this latter context, interesting and somewhat unexpected estimates are derived not only at the level of the initial-boundary value problems but also in connection with the linear heat initial value problem. (Received September 14, 2018)