Regularity and time behavior of the solutions to some parabolic equations with irregular data

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We will present some recent advances for a class nonlinear evolutionary PDE's of parabolic type. Particular attention will be given to the qualitative properties, regularity and behavior in time of the solutions to a class of nonlinear parabolic equations appearing in many physical applications and including the p-Laplacian equation and nonlinear versions of the heat equation. We will show that either the case of smoothing or no smoothing effects can appear. We will show cases when the influence of the solutions to suitable elliptic problems appears. Finally, we will discuss what happens when there are non-zero forcing terms.

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