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Weak Periodic Solutions of Some Quasilinear Parabolic Equations with Data Measures

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Abstract: The goal of this paper is to study the existence of weak periodic solutions for some quasilinear parabolic equations with data measures and critical growth nonlinearity with respect to the gradient. The classical techniques based on C^{α}-estimates for the solution or its gradient cannot be applied because of the lack of regularity and a new approach must be considered.

Various necessary conditions are obtained on the data for existence. The existence of at least one weak periodic solution is proved under the assumption that a weak periodic super solution is known. The results are applied to reaction-diffusion systems arising from chemical kinetics.

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