

Abstract Submitted
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Thermodynamics of bread baking: A two-state model ULRICH ZURCHER, Physics Department, Cleveland State University — We examine the thermodynamics of bread baking and investigate the heat flow through dough. We find that the evaporation of excess water is the rate-limiting step. We consider a simplified one-dimensional model of bread, treating the excess water content as a two-state variable that is zero for baked bread and a fixed constant for unbaked dough. We arrive at a system of coupled, nonlinear differential equations, which are solved using a standard Runge-Kutta method. The calculated baking times are consistent with common baking experience [J. Am. Phys. **82**, 224, (2014)].

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