Oscillatory radiatively-forced internal convection STEFAN LLEWELLYN SMITH, MAE, UCSD — Internal convection, in which stably stratified fluid is destabilized by internal heating, shows interesting differences from the canonical situation of Rayleigh-Benard convection with forcing at the boundaries. We consider the case when the thermal forcing is the result of radiative heating, yielding an exponential profile in the vertical, rather than a uniformly distributed source of buoyancy, and when the forcing is oscillatory in time. These two effects do not appear to have been treated together previously. We examine the linear instability problem considering steady, harmonic and more general periodic forcings. We also discuss nonlinear effects. The underlying problem is relevant to Springtime heating in the Great Lakes, in which case heating destabilizes the water column because the temperature is in the anomalous regime when water becomes denser with heating.

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