

Abstract Submitted
for the OSS08 Meeting of
The American Physical Society

Sorting Category: 2. (E)

The Earth Microwave Background and the Generation of Isotropy. PIERRE-MARIE ROBITAILLE, The Ohio State University — Astrophysics currently views the microwave background as a remnant of ancient cosmological processes. The background is characterized by a generally isotropic field seemingly reporting a temperature of ~ 3 K. Recently however, I have advanced that the microwave background is of oceanic origin. The ~ 3 K signature is a reflection that the oceans are not in the solid state and possess convection currents. Therefore, they are unable to meet the requirements set forth by Kirchhoff for assigning a temperature based on the laws of thermal emission. Irrespective of its ultimate origin, the background is clearly not in thermal equilibrium with a rigid (and perfectly absorbing) enclosure. At the same time, since the Earth is anisotropic, with both solid and liquid surfaces, it is not evident that it can produce an isotropic signal. However, a review of atmospheric contributions to surface based measurements of the microwave background reveals that substantial scattering can occur in the atmosphere. Indeed, atmospheric contributions to the microwave background increase substantially with increasing frequency. This is an indication that important scattering processes exist in the atmosphere. These processes can readily transform the signal arising from the anisotropic surface of the Earth to a perfectly isotropic signature when viewed from COBE. This represents yet another indication that the microwave background did indeed originate from the oceans.

Prefer Oral Session
 Prefer Poster Session

Pierre-Marie Robitaille
robitaille.1@osu.edu
The Ohio State University

Date submitted: 03 Mar 2008

Electronic form version 1.4