

# STUDY OF THE KINEMATICS, DRIVER OF THE GLOBAL MORETON WAVE OBSERVED ON 28-10-2003

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## Abstract

We analyze evolution and kinematics of the fast, globally propagating Moreton wave of 2003 October 28 associated with the extreme X17.2 solar flare/CME event. This Moreton wave is distinct due to its azimuthal span of  $\sim 360$  deg. Thus its characteristics are studied in different propagation directions, and compared with the associated phenomena: EIT wave, coronal dimmings, radio type II burst, fast halo CME, and flare. The sectoral analysis give mean velocity values in the range of  $v \sim 900 - 1000 \text{ km s}^{-1}$ ; two sectors show wave deceleration. Analyzing the perturbation profiles indicates an amplitude growth followed by amplitude weakening and broadening, which is consistent with a disturbance first driven and then evolving into a freely propagating wave. We find two "radiant points" for the Moreton wave fronts on opposite east-west edges of the source region, roughly co-spatial with the bipolar coronal dimming. Type II bursts are known as remote signatures of shocks propagating through solar atmosphere. Thus, the co-spatiality of the associated radio type II burst source and the first Moreton wave fronts indicate that the wave is an initially shocked fast-mode wave launched from an extended region. These findings indicate that the wave is initiated by the CME expanding flanks.

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