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A cool puzzle in the solar atmosphere

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Contributed talk

Abstract:
While the nature of the heating mechanism that produces a rise in temperature just above the solar surface is a critical unsolved problem in astrophysics, the fact that the heated chromosphere contains pockets of material much cooler than their surroundings is also puzzling.
ALMA observations of the solar chromosphere are unique in providing direct electron temperature measurements, and are confirming that indeed there is significant cool material in the chromosphere. This paper discusses ALMA detections of strikingly cold material in both a quiet Sun region at Band 3 and in active-region plage at Band 6 that have no counterparts in observations at UV wavelengths or in magnetic field measurements. Such observations constrain radiative-MHD models of the chromosphere.

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