



## Local Enhancement of a Moreton Wave in the quiet Sun

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Moreton Waves are a large-scale global wave phenomenon generated by solar eruptions, manifested as bright fronts in the H $\alpha$  line center and blue wing (or dark fronts in the H $\alpha$  red wing). Generally, Moreton waves are considered as the footprint on the chromosphere of coronal fast-mode shock waves. As the fast-mode shock propagates further away from the eruption source region, the corresponding Moreton wave generally becomes weaker and weaker until it disappears.

However, when analyzing an X-class solar flare with the data obtained by the Chinese H $\alpha$  Solar Explorer (CHASE)<sup>[1,2]</sup>, we recent found that as the Moreton wave propagates out, the strength of wave front has an abnormal enhancement at a special location. We analyzed the multi-wavelength difference images and perform the global nonlinear force-free

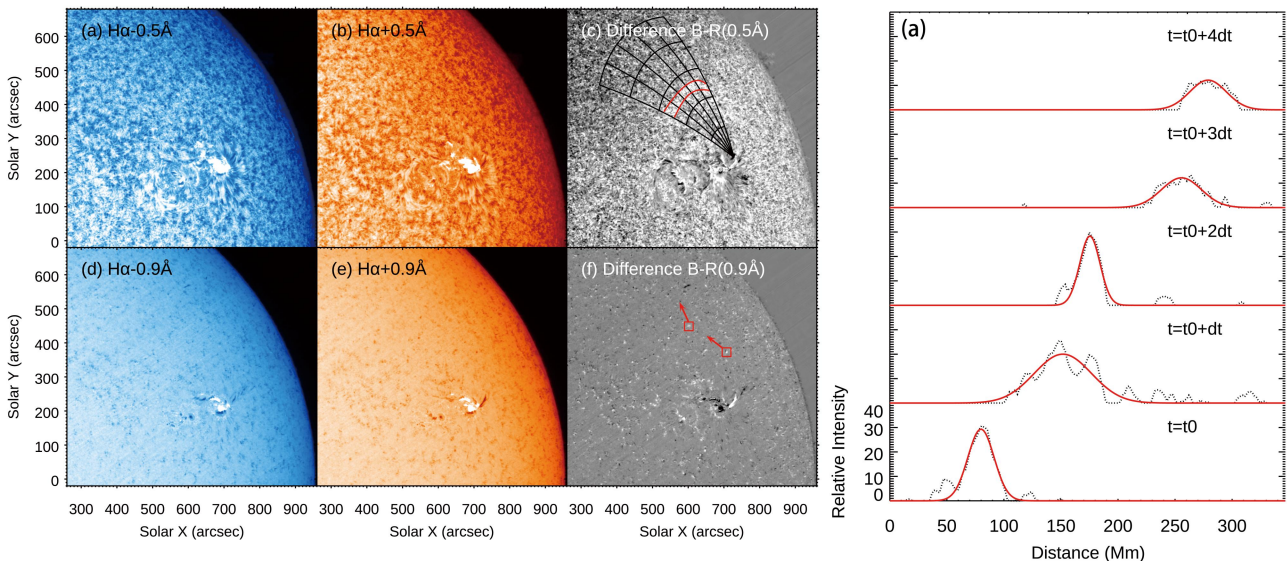
field extrapolation, and it is revealed that the special location corresponds to the root of a quasi-separatrix layer (QSL).

We propose that the coronal fast-mode shock wave experiences a mode conversion around the QSL, and much of its energy is transferred to a slow-mode wave<sup>[3]</sup>, which is trapped inside the magnetic field line, leading to the abnormal enhancement of Moreton wave at the footpoint of the QSL.

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### References

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**Figure 1.** Local Enhancement of a Moreton Wave in the quiet Sun. Left panels: H $\alpha$  blue wing, red wing and their difference observed from CHASE/HIS. Right panels: The time evolution of the relative wave front intensity. The local enhancement of the Moreton Wave occurred approaching the outer QSL of coronal magnetic field.