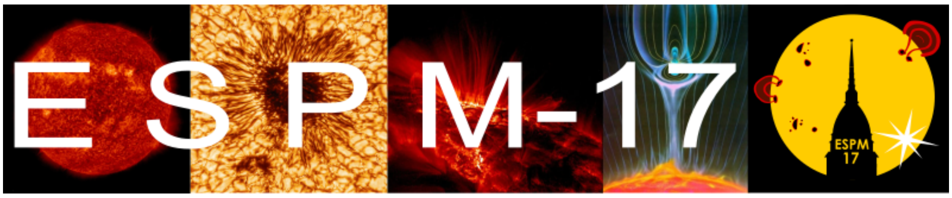

Contribution ID: **130** Type: **Poster**

Magnetic Rayleigh-Taylor instability in Solar Atmosphere: Downward Magnetic Flux Transport

This work dealt with the numerical simulation of the magnetic Rayleigh Taylor instability (IMRT) in a magnetic tube suspended in the chromosphere/photosphere conditions. We solved the compressible nonlinear MHD equations using the 2.5D open-source MPI-AMRVAC numerical code. Therefore we were interested in studying the effect of the horizontal magnetic tension on the development of the IMRT and trying to determine its characteristics. Our results showed that the horizontal magnetic component Bx plays an important role in the development of the IMRT where for higher Bx the number of mushrooms and bubbles decreased and the heat exchange between fluids above the magnetic tube tend to reducing. Moreover, we note that the second horizontal magnetic component Bz we found that this later fellows the displacement of the mushroom toward the photosphere as a frozen field and thus accumulate at the crest of the mushroom. This leads to the increase of the Bz intensity and thus to favorize the buoyancy. As a result of the buoyancy, a coalescence of two mushrooms was observed leading to the formation of a plasmoid with lighter-hot plasma bubbles conditions inside a heavy-colder mushroom and transported toward the photosphere. We also observed that the time variation of the mushroom length contains two phases (slow and fast) and that the time separating the two phases increases when Bx intensity becomes higher. With the process of the IMRT, we were able to explain the rainfall of the prominence plasma material toward the photosphere and reconnection to the surface magnetic field.

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Track Classification: Diagnostic tools and numerical methods in solar physics