Search for new variable Extremely-low mass white dwarf stars

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The Galaxy is not old enough to form a 0.3Msun white dwarf by a single star evolution. Yet, about a hundred of these extremely-low mass white dwarfs (ELMs) are known. If these stars are part of a binary system, their existence could be explained as a result of mass transfer in a post-main-sequence common-envelope phase or a stable Roche-lobe overflow episode in multiple systems. The recent discovery of pulsating ELMs (ELMVs) has greatly sparked the interest in these objects, as it provides a unique opportunity to explore the internal structure and shed a light on their formation. As strong sources of gravitational waves, ELMs will also have an important contribution to the signal detected by space-based missions such as LISA. Furthermore, current observations with TESS satellite and Gaia Mission are an important asset as they allow a compilation of an all-sky volume-limited sample of ELM candidates with measured distances. Also, TESS is playing an important role in the characterization of new variable white dwarfs. Last year, we performed ground-based follow-up observations of the variable ELM candidates, both pulsating and binaries, from TESS light curves, as well as the high-probability ELMVs that were selected from the Gaia sample. In this talk, I will present the new ELM candidates that we selected based on their variability in TESS data and the results that we are obtaining from ground-based photometric and spectroscopic follow-up.