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The Gaia color-magnitude diagram revealing the physics of white dwarfs (poster pitch)

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White dwarf stars are the most common end-point of stellar evolution. Therefore, these numerous, old and compact objects provide valuable information on the late stages of stellar evolution, and the structure and evolution of our Galaxy. The ESA Gaia space mission has revolutionized this research field, revealing unexpected features on the color-magnitude diagram for white dwarf stars, and raising new questions on the nature of these stars. Namely, the white dwarf cooling sequence is divided into three main branches: A, B and Q. On the basis of detailed theoretical evolutionary models and population synthesis studies, we have analyzed these branches providing possible explanations for them. We found that the Q branch can be reproduced if the energy released by crystallization and sedimentation of minor species is included, and that the B branch can be explained by a hidden population of white dwarfs with “invisible” atmospheric carbon traces.

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