UNIVERSIDAD Đ CÓRDOBA

Global Science Education and Research Seminars

Campus de Rabanales, Sala de Grados de la Biblioteca

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Andrés del Pino completed first degree in Physics at the University of Córdoba. In 2009 he graduated at the University of La Laguna. He accomplished two specialities Mcs: Technology & Instrumentation and Theory & Computation. In 2014 obtained his PhD at the Instituto de Astrofísica de Canarias. Since then he has been working as a postdoc at the Nicolaus Copernicus Astronomical Center in Warsaw, Poland. In fall 2017 he will become part of the HST-promo team at the Space Telescope Science Center in Baltimore (USA). His main research focuses on galaxy formation and evolution. More specifically, in the dynamical evolution of resolved stellar populations in stellar systems.

Andrés has been involved in several international projects covering different fields in Astrophysics. So far these have brought 15 refereed publication and more than 20 contributions in international conferences.

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Dwarfs in our neighbourhood

How galaxies form is still an open question. The currently most accepted cosmological scenario, the Λ Cold Dark Matter, predicts that dwarf galaxies were the first structures to appear. Later, due to mergers between this first generation of galaxies, the largest galaxies were formed. This implies that the dwarf galaxies we observe today may be relics from this first generation of galaxies and may contain information about the origin of the Universe.

Dwarfs are the most numerous galaxies in the Universe. They can normally be found as satellites of larger galaxies, orbiting them as the planets do it around the Sun. When classifying dwarfs regarding their shapes, the most common type are the dwarf spheroidal galaxies (dSPh). DSphs are galaxies characterized by their roundish shapes, low luminosities, small sizes, and lack of gas. Their cosmological significance is not yet clear. From computerized models, it follows that dSPhs could be the evolved state of disk-shaped galaxies with high rotation velocities. After more than one billion years of evolution, these galaxies would have become spheroids as a result of different environmental and internal processes. If this scenario is correct, some residual rotation signal should be present in these galaxies.

Despite more than a decade of thorough analysis of the chemical and kinematic properties of nearby dSph galaxies, except for some isolated cases, no clear rotation signal has been found in these systems. Could rotation signals in dSphs have escaped detection due to the highly chaotic orbits of their stars? In the case they do not rotate at all, how did they acquire their elongated shapes and are not simply spherical?

Let me try to answer some of these questions during this talk.