

Young stars in the CO Cepheus void and its surrounding

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Abstract

After mixing in the Galactic plane, young stars are barely discernible from old ones. In the *RasTyc* sample we have identified several stars whose lithium content is higher than that of the Pleiades cluster members. Furthermore, four of them are concentrated, within a few degrees, inside the CO Cepheus void. They likely constitute a new young association. To discover further additional members, we used multivariate analysis methods for selecting optical and infrared counterparts of ROSAT All-Sky Survey/XMM-Newton X-ray sources cross-identified with late-type stars. From our spectroscopic observations, we distinguished two populations of lithium-rich stars that are spatially and kinematically separated. While the sources having the same lithium content as the members of the Pleiades cluster are mostly projected towards the Galactic plane, the youngest stars are mainly located in the sky area surrounding the CO Cepheus void and have an age of about 5 – 15 Myr. The latter stars have properties (age, proper motions, radial velocity, ...) rather similar to those derived for the four comoving T Tauri stars already found in this region. Thus, they form the first young association of the northern sky. The discovery of young field stars is of great importance to give new insight into the process of stellar formation outside standard star-forming regions. Further data, such as those from the future Gaia mission, will certainly shed light on this issue and on the origin of this group that could be related to the Cepheus-Cassiopeia complex, which is the closest active star-forming region.

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