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Searching for signatures of nearby sources of cosmic rays in their local chemical composition

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<p>The direct evidence for the acceleration of hadronic cosmic rays at supernova remnants underlined the need for a 3D time dependent treatment of the propagation of Galactic Cosmic Rays (CRs). Full 3D time dependent calculations of the propagation of CRs have shown that if CRs indeed originate from supernova remnants, transient point-like sources, the flux of the CR primary component measured at Earth depends strongly on the local source history, whereas the secondary component shows only little or no variations due to nearby sources. The most widely used steady state, rotational symmetric models (2D) of CR propagation cannot take into account the local source history, but rather mimic source histories that result in the same local CR flux as the smeared-out sources assumed in 2D models and do not necessarily coincide with the real local source history. Using a steady state, rotational symmetric model for a parameter study, one may expect different best fit values looking at the primary and secondary CR components separately, as it is unlikely that the source history mimicked by the 2D models coincide with the real local source history. We adapted the 2D version of the GALPROP code to a cluster environment and perform parameter studies comparing CR spectra with mainly primary and secondary CR data separately. First results of these studies will be presented and recommendations for further such studies will be given.

Level (Hons, MSc,
   PhD, other)?

M.Sc.

Consider for a student
   award (Yes / No)?

Yes

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

Yes

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