

EP 1: Plenarvortrag Dieter Breitschwerdt

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Plenarvortrag

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Where and when did recent supernovae near Earth explode? — ●DIETER BREITSCHWERDT¹, JENNY FEIGE¹, MICHAEL SCHULREICH¹, MIGUEL AVILLES², and CHRISTIAN DETTBARN³ — ¹Zentrum für Astronomie und Astrophysik, TU Berlin — ²Department of Mathematics, University of Evora, Portugal — ³ARI, Zentrum für Astronomie Heidelberg

Radioactive isotopes like ^{60}Fe (half-life time 2.6 million years), found in the deep-sea ferromanganese crust and sediments, give information on supernovae that exploded near Earth during the last 15 million years. ^{60}Fe is produced in AGB stars and during explosive nucleosynthesis, and incorporated in dust grains, travelling through interstellar

space. Since all terrestrial ^{60}Fe has decayed long ago, all recently detected signals in various ocean samples, the moon, in magnetotactic bacteria, and in cosmic rays must stem from nearby core-collapse supernovae. These measurements point to a significant peak in the ^{60}Fe fluence at about 2.2 million years ago. We have performed analytical and numerical hydrodynamical high resolution simulations that can explain both the ^{60}Fe fluence as well as the formation and evolution of the Local Bubble (harbouring the solar system), as the result of supernovae exploding in a nearby moving group. It will be shown how many explosions should have occurred and when, and where their most probable sites are found. The effects of these explosions will also be discussed briefly.