Astrophysics > Galaxy Astrophysics

Manganese evolution in Omega Centauri: a clue to the cluster formation mechanisms?

Donatella Romano, Gabriele Cescutti, Francesca Matteucci

(Submitted on 27 Jul 2011)

We model the evolution of manganese relative to iron in the progenitor system of the globular cluster Omega Centauri by means of a self-consistent chemical evolution model. We use stellar yields that already reproduce the measurements of [Mn/Fe] versus [Fe/H] in Galactic field disc and halo stars, in Galactic bulge stars and in the Sagittarius dwarf spheroidal galaxy. We compare our model predictions to the Mn abundances measured in a sample of 10 red giant members and 6 subgiant members of Omega Cen. The low values of [Mn/Fe] observed in a few, metal-rich stars of the sample cannot be explained in the framework of our standard, homogeneous chemical evolution model. Introducing cooling flows that selectively bring to the cluster core only the ejecta from specific categories of stars does not help to heal the disagreement with the observations. The capture of field stars does not offer a viable explanation either. The observed spread in the data and the lowest [Mn/Fe] values could, in principle, be understood if the system experienced inhomogeneous chemical evolution. Such an eventuality is qualitatively discussed in the present paper. However, more measurements of Mn in Omega Cen stars are needed to settle the issue of Mn evolution in this cluster.

Comments:	8 pages, 4 figures, accepted for publication in MNRAS
Subjects:	**Galaxy Astrophysics (astro-ph.GA)**
Cite as:	**arXiv:1107.5477 [astro-ph.GA]**
	(or **arXiv:1107.5477v1 [astro-ph.GA]** for this version)

Submission history

From: Donatella Romano [view email]
[v1] Wed, 27 Jul 2011 14:00:56 GMT (130kb)

Which authors of this paper are endorsers?