

**EXTRASOLAR COMETS IN OUR SOLAR SYSTEM
CAPTURED DURING CLOSE ENCOUNTERS WITH
NEARBY STARS?**

M.C.L. Rocca¹ and R.D. Acevedo²

¹The Planetary Society, Mendoza 2779-16A, CABA, Argentina.

²CADIC-CONICET, Ushuaia, Tierra del Fuego, Argentina.

Email: maxrocca2010@gmail.com

Introduction: It is well known that most of the comets of our Solar System are located at the Oort cloud. The Oort cloud is spherical in shape, it is located at almost 1 year light from the Sun and it contains millions of icy cometary nucleus.

It is also well stated that many of the Main Sequence nearby stars of our Milky Way galaxy have their own cometary clouds or rings too. Good examples are Alpha Lyrae (Vega, Spectrum: A0 V, located at 27 light years), Alpha Piscis Australis (Fomalhaut, Spectrum: A3 V, at 23 l.y.), Tau Ceti (Spectrum: G8 Vp at 11 l.y.) and Epsilon Eridani (Spectrum: K2 V at 10 l.y.). All these stars have very dense cometary clouds or rings orbiting around.

With the pass of time, close encounters between the Sun and nearby stars may introduce severe orbital gravity perturbations in the comets located at the local Oort cloud [1]. If many of the Main Sequence nearby stars in our galaxy have their own Oort cometary clouds it is also clear that exchange and capture of extrasolar comets by the Sun may happen during close encounters with nearby stars.

As an example of a future close encounter, the Main Sequence orange dwarf Gliese 710 (Spectrum: K7 V at 63 l.y. in the constellation of Serpens) will approach to 1.1 light year to the Sun in 1.1 to 1.3 million years from now. That will be a very close encounter and severe perturbations in the Sun's Oort cometary cloud could be expected.

It is suggested here that exchange and capture of extrasolar comets from Gliese 710 will happen too in the above mentioned event.

Many similar close encounters with other Main Sequence nearby stars of our galaxy surely have happened in the geologic past time scales. No doubt hundreds of those close encounters events have happened since the birth of our Solar System.

In each case perturbation, exchange and capture of solar and extrasolar comets would have happened.

Conclusion: We may expect to find many extrasolar captured cometary nucleus orbiting among the present cometary population of our Solar System. Identification of those extrasolar captured comets could be achieved by "in situ" sampling or by remote sensors examination.

Exotic atomic isotopic composition combinations and exotic ages dates would be expected. Those captured extrasolar cometary objects could be present at any orbits in both the Inner and the Outer Solar System.

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References: [1] Festou M.C., Keller H.U., Weaver H.A. 2002 *Comets II, The University of Arizona Press, Tucson, 785 pages.*