Equivalence of the Recently Proposed Paramagnetic Bonding with Santilli's 1998 Magnecular Bonding.

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ABSTRACT. In the recent paper [1], Kai K. Lange, E. I. Tellgren, M. R. Hoffmann, and T. Helgaker have suggested the existence under certain astrophysical conditions of a new atomic bonding called perpendicular paramagnetic bonding. In these comments, we show that such a bonding has been originally proposed by R. M. Santilli in 1998 [2], subsequently developed in various works and recently verified experimentally [2-5], under the name of magnecular bonding since the latter was conceived as the most general possible electromagnetic configura- tion resulting in an axial (perpendicular) bonding between different atoms. In these comments, we also indicate that the experimental verifications on Earth of Santilli magnecular bonding appear to be a verification also of the indicated bonding in astrophysics.

In the recent paper [1], Kai K. Lange, E. I. Tellgren, M. R. Hoffmann, and T. Helgaker have have suggested the existence under certain astrophysical conditions of a new atomic bonding called perpendicular paramagnetic bonding. In these comments, we would like to point out that that such a bonding has been originally proposed by R. M. Santilli in 1998 [2], subsequently developed in various works (see, e.g., monograph [3] of 2001), independently confirmed by various experiments (see, e.g., the recent Refs. [4,5] and papers quoted therein), and it is today known as Santilli magnecular bonding.

In the 1998 memoir [2], Santilli conceived, formulated and verified experimentally the mag- necular bonding to explain the existence of anomalous atomic clusters in combustible gases produced by submerged electric arcs within a liquid feedstock, which gases are today commer- cially produced and sold as magnegas (see, e.g., magnegas.com). In fact, said clusters failed to achieve a clear identification in via mass spectroscopy, while having no infrared signature at their atomic mass unit. As illustrated in the conceptual rendering of Fig. 1, Santilli conceived his bonding via the use of the most general possible electromagnetic configuration, thus including magnetic and electric contributions, capable to produce atomic attractions of primary axial (thus perpendicu- lar) type. Consequently, Santilli magnecular bonding includes as a particular case the bonding of Ref. [1], as well as any type of non-valence bonding of electromagnetic character.

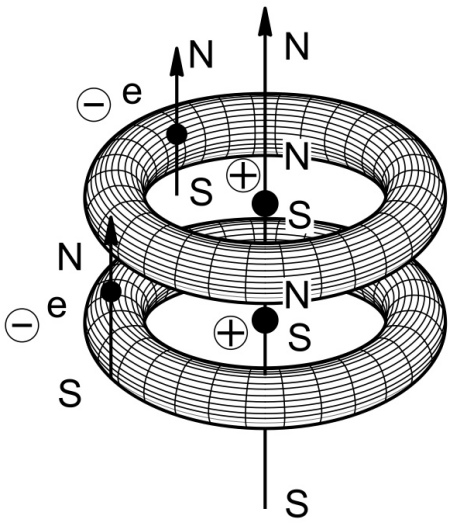

Figure 1: A conceptual rendering of Santilli's bi-atomic magnecule illustrating the dominance of the attraction between opposing polarities the axial (perpendicular) magnetic polarizations of orbitals into toroids over electric repulsions caused by null total charge.

More specifically, Fig. 1 illustrates Santilli magnecular bonding between two atoms as- sumed to be at absolute zero degree temperature with a toroidal polarization of electron orbitals caused by very intense magnetic fields at atomic distances from submerged electric arcs. Such polarizations cause an axial (thus perpendicular) magnetic field that does not exist for con- ventional spherical distributions of electron orbitals and produces atomic attractions between opposing magnetic polarities of said toroid configurations, but also of nuclei and electrons. Since atoms are assumed to be neutral, calculations have shown that the indicated magnetic at- tractions overcome Coulomb repulsions, as one can see also by assuming in first approximation that hadrons have a null charge distribution.

In conclusion, rather than dealing with a scientific conflict, we see an interesting synergy between Refs. [1,2]. In particular, the experimental confirmations on Earth of Santilli's mag- necular bonding of Refs. [2-5] appear to be confirmations also of the astrophysical bonding of Ref. [1].

References

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