Abstract submitted to ICCF-22 (September 8-13, 2019 Assisi, Italy)

Pulsing Sideband at 327.37 MHz May Herald Movements within an Active Loaded PdD Lattice

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JET Energy, Inc. July 14, 2019

Active LANR (lattice assisted nuclear reaction) systems, both aqueous and dry nanomaterial, emit very narrow bandwidth radiofrequency (RF) emission lines (circa 327.37 MHz) in the Deuteron-Line (DL) region [1]. The maser line can include sidebands which appear by resonance broadening and energy exchange processes [2]. The superhyperfine sideband line (SHFL) structure (Figure 1) has been analyzed for the aqueous nickel MOAC system in its active mode [3]. In that light, the pulsatile superhyperfine RF line (PSHFL) is evident with periods of minutes. It is unlike everything else examined over two years from Earth and galactic origin, and only associated with XSH from an ordinary water nickel CF/LANR system. This is not mode-locking [4]. Laser mode locking involves hundreds of half-wavelengths, enabling interaction of different mode orders; but this 327 MHz LANR maser has only single-mode (half wavelength) operation. Laser mode locked pulses are separated by the Fabry-Perot cavity transit time but the 327 MHz LANR maser pulsing sideband is characterized by times which are minutes. Finally, laser mode locked pulses have a Gaussian or a hyperbolic-secant-squared (sech2) pulse shape but the 327 CF/LANR maser's pulses appear as near step functions.

What this is, instead, might be new information obtained from these unique pulsing RF bands which may herald deuteron density movements between, and to other, lattice regions, as revealed by the PSHFL (and interpreted, depending upon the model used: Band States, Bose Einstein condensates, and other quasiparticles). It is a fact that thirty years of data demonstrate that deuterons loaded into Group VIII metals DO work together in active LANR systems to generate *de novo* ^{4}He. There are inverted populations of atomic D [1] with RF D-line emission sidebands [2] and this RF pulsing from active LANR systems might indicate part of an active-necessary deuteron redistribution in the lattice. Is such redistribution a *sine qua non* for successful movement through the Coulomb barrier? Efforts are underway to examine this further, including intensities, pulsations and transfer-movements; which together suggest a need for an intralattice kinetoscope.

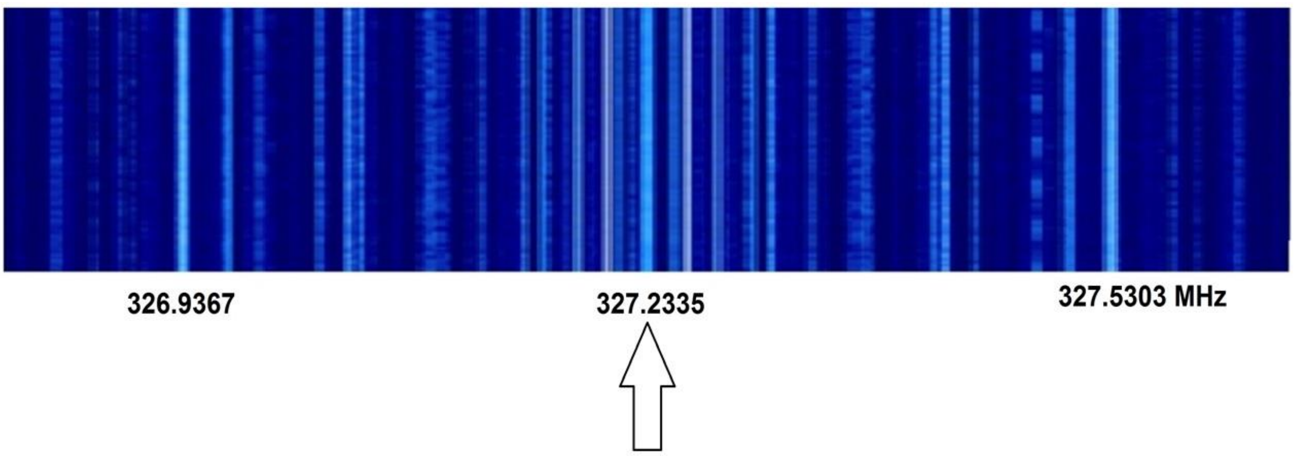

Figure 1 – Pulsatile RF Emissions in a Background of other RF SHF Lines
The Radiofrequency Superhyperfine D-L spectrum of hydrogen loaded nickel MOAC during its active state [40 volts, 200 milliamperes]. This is a 'waterfall' plot and intensity is shown as a function of frequency. Note the arrow appears to almost be a horizontal mirror axis.

[1] Swartz M., Atomic Deuterium in Active LANR Systems Produces 327.37 MHz Superhyperfine RF Maser Emission (ICCF-22, 2019)
[2] Swartz M., Superhyperfine Sideband Structure of the Deuteron Line Emission from the ZrO2PdD Active Site May Herald an FCC Vacancy (ICCF-22, 2019)
[3] Swartz, M. R, C. Haldemann, A. Weinberg, B. Ahern, Possible Deuterium Loss During Excess Heat From Ordinary Water-Carbonate Electrolyte using Nickel, J. Condensed Matter Nucl. Sci. (Proc. ICCF-21, 2018)
[4] Herman A. Haus, Mode-Locking of Lasers, IEEE J Sel. Topics in Quantum Electronics, 6, 6, (2000) , 1173
[5] The author thanks David Nagel and Bo Gardmark.