Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Resonant Interaction, Approximate Symmetry, and Electromagnetic Interaction (EMI) in Low Energy Nuclear Reactions (LENR) SCOTT CHUBB, Research Systems, Inc, 9822 Pebble Weigh Ct., Burke, VA 22015-3378 — Only recently (talk by P.A. Mosier-Boss et al, in this session) has it become possible to trigger high energy particle emission and Excess Heat, on demand, in LENR involving PdD. Also, most nuclear physicists are bothered by the fact that the dominant reaction appears to be related to the least common deuteron(d) fusion reaction,d+d $\rightarrow \alpha+\gamma$. A clear consensus about the underlying effect has also been illusive. One reason for this involves confusion about the approximate (SU2) symmetry: The fact that all d-d fusion reactions conserve isospin has been widely assumed to mean the dynamics is driven by the strong force interaction (SFI), NOT EMI. Thus, most nuclear physicists assume: 1. EMI is static; 2. Dominant reactions have smallest changes in incident kinetic energy (T); and (because of 2), d+d $\rightarrow \alpha+\gamma$ is suppressed. But this assumes a stronger form of SU2 symmetry than is present; d+d $\rightarrow \alpha+\gamma$ reactions are suppressed not because of large changes in T but because the interaction potential involves EMI, is dynamic (not static), the SFI is static, and because the two incident deuterons must have approximate Bose Exchange symmetry and vanishing spin. A generalization of this idea involves a resonant form of reaction, similar to the de-excitation of an atom. These and related (broken gauge) symmetry EMI effects on LENR are discussed.

Scott Chubb
Naval Research Laboratory

Date submitted: 17 Nov 2006 Electronic form version 1.4