

## Water – Nanoscale to Microscale to Macroscale

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### Abstract

This paper deals with frequency and fractal related aspects of coherence in water which link the nanoscale through the microscale to the macroscale with particular reference to possible evidence for nilpotency events. It is based on the concept of domains of coherence in water. It develops work reported in CASYS'01 which showed that the basic arithmetic operations could be performed on frequency imprinted aliquots of water and in CASYS'05 where this was extended to implementation of the basic reversible logic gates. Memory in living systems, DNA and water are considered in respect of possible computer system applications and a nilpotency rule.

**Keywords:** Water, Frequencies, Coherence, Fractals, Nilpotency.

### 1 Introduction

Fröhlich investigated the properties of coherence in living biological systems as described in his Fest-Schrift. (Smith, 2006). Domains of coherence in condensed matter including water were predicted by Preparata and Del Giudice (Arani et al. 1995). Their theory gives the experimentally determined values for many of the physical properties of water including: critical volume; boiling temperature; latent heat of vaporisation; specific heat; the specific heat and compressibility anomaly at 230K; density anomaly at freezing point and the low frequency dielectric constant for water. Smith (2001, 2005) showed that arithmetic and logic operations could be performed on frequencies imprinted into water.

An emerging view is that memory in living systems, DNA and water is *quantum holographic* and *syntactic* with the information encoded in *phase* (possibly the phase of a macroscopic wave function) and operations modelled on computer '*re-write*' systems with a 'nil-potency' rule. A quantum holographic system is the only system which places its image in the actual location of the object in space and time (Marcer and Schempp, 1998). Recent work on computer '*re-write*' systems looks towards a universal system with only a 'create' and a 'conserve' function which must be iterative and recursive from a 'start-object' to a 'stop-criterion' with a 'nil-potency' or 'empty-set' rule (Diaz and Rowlands, 2004).

Rowlands (2007) has described a form of expression for the 'Dirac Equation' which contains purely physical information so that mathematics becomes an intrinsic part of physical structure. Furthermore, the equation contains three terms which separately express the "energy", "momentum" and "mass" in the physical system. He



















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