In modern computing, semiconductors have become indispensable due to their speed and efficiency in carrying out binary logic operations. However, semiconductors are not the only viable option for this purpose. This presentation will explore another technology which can be used in a similar way. Nanomagnetic triangles (or triads) possess possibility of information storage and manipulation at nanoscale while consuming significantly less energy in comparison to conventional semiconductor circuits. Non-volatility in combination with computational advantages makes this technology a viable CMOS alternative or compliment. In this presentation we will discuss results of our investigations of triad's fundamental physical properties.

We use NMAG and OOMMF software packages to simulate the time-dependent magnetic interactions between nanomagnetic triangles arranged in planar arrays of varying placement. Each array is solved and modeled into 3d structures. The simulations demonstrate magnetic anisotropy within individual triads as well as more complicated triad-based structures. The orientation of magnetic moments in these structures will then be explored as an effective way to represent ternary data. In addition, the interaction between these structures as a whole will be presented as a means to carry out ternary logic operations rather than binary ones.