Peripheral Linking Invariants of Embedded Curves in Space

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The linking number of two component links is one the fundamental invariants which has several equivalent definitions, such as the degree of the Gauss map, Gaussian integral, and diagrammatic method through crossing numbers. We introduce an invariant with a diagrammatic and combinatorial approach towards linking numbers of directed curves, with end points, embedded in space. We focus on projections on a plane normal to the vector defined by the two endpoints of two distinct curves. For the four choices of such projections, we compute a new invariant called the end-matched linking triple, associated to the crossing signs of the projected diagrams, respectively. The invariant is applied to the DNA based tensegrity triangle units. We show that this invariant can distinguish the chirality of these units.

Keywords: Linking Number, Linkoids, Embedded curves, DNA crystals