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ARTICLE

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VOLUME LIKE ELEMENT OF A PENTACHORON IN HYPERBOLIC SPACE

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In this article, we are interested to compute volume like element of a Pentachoron (4-simplex) embedded in four-dimensional hyperbolic space (H^4). The Euclidean volume of a tetrahedron (3-simplex) in terms of face angles and edges of the tetrahedron using Caley-Menger determinant is already computed. Motivated by this, we extend these ideas to the hyperbolic setting. Using the hyperbolic Cayley–Menger determinant and relations between edge lengths, face angles, and face radii, we derive an explicit expression for volume like element of a hyperbolic pentachoron. This method is useful in application of Graph Neural Network.