An expression for the volume of asymptotic parallelepiped

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We consider isometric immersions of regions of Lobachevsky space L^3 into Euclidean space E^5. J. D Moore proved that on the immersed region there exist global asymptotic coordinates. Therefore we can consider coordinate parallelepiped constructed with the help of asymptotic curves. Taking into attention the analogy with the case of immersions of regions of L^2 into E^3 , J. D. Moore expressed an opinion that the volume V of asymptotic parallelepiped can be calculated in terms of angles between asymptotic curves at its vertices.

We obtain an expression for V for 3-dimensional analog of pseudosphere. From this expression it follows that the volume V of asymptotic parallelepiped on the universal cover of this immersed regions of L^3 into E^5 is bounded from above by a universal constant.

Similar result is obtaned for immersions of L^4 into E^7.