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A Property of the Fermat-Torricelli Point for Tetrahedra and a new Characterization for Isosceles Tetrahedra

If the Fermat-Torricelli point A_0 is strictly inside a tetrahedron $A_1 A_2 A_3 A_4$, we prove that the angle bisectors of $\angle A_i A_0 A_j$, for $i \neq j$, $i, j = 1, 2, 3, 4$ form three bisecting lines that meet perpendicular at A_0. From this, we derive a new characterization of isosceles tetrahedra.

Keywords: Fermat-Torricelli point, angle bisector, isosceles tetrahedra.

MSC: 51M14; 51M20, 51M16.