A dihedral angle or torsional angle (symbol: \( \theta \)) is the angle between two bonds originating from different atoms in a Newman projection.

eg: staggered conformation of ethane

The angle between any blue C-H bond (C-H\(_1\), C-H\(_2\), C-H\(_3\)) and any red C-H bond (C-H\(_4\), C-H\(_5\), C-H\(_6\)) is a dihedral angle. Thus, the angle between C-H\(_1\) and C-H\(_4\), which is 60º, is a dihedral angle.

Geometrically, a dihedral angle is an angle between two intersecting planes. For example, the dihedral angle between C-H\(_1\) and C-H\(_4\) in the above Newman projection is the angle between the plane bisecting C-H\(_1\) and that bisecting C-H\(_4\), both perpendicular to the plane of the screen.

see also bond angle

Contributors

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