# Algorithmic effects description

## Level of detail

The level of detail effect is visible while moving towards the house. To implement this, a own LevelOfDetailSGNode has been created, which takes three objects, one for each level.

In the render() function it decides which object to render by comparing the current distance from the object to the camera with the level-thresholds.

Here is the rendering decision in pseudo-code:

if (distance > threshold1) { //render level 0 }

else if (distance > threshold2) { //render level 1}

else { //render level 2 }

The level thresholds are constants: threshold1 = 20, threshold2 = 10.

The distance from the object to the camera is calculated as the euclidian distance between two 3D-vectors:

The three levels of the house are as follows:

Level 0: The house consists only of a quad and a roof with a constant material color (brick-red).

Level 1: A texture is mapped onto each wall and on the roof

Level 2: A texture is additionally mapped onto the floor and the ceiling. The front wall gets split into pieces and windows and a door are added. A basement with wall texture is added to compensate the roundness of the planet, so there is no gap between the house and the planet anymore.