For a singular hypersurface of arbitrary type in quadratic gravity motion equations were obtained using only the least action principle. The coefficients in the motion equations are zeroed with a combination corresponding to the Gauss-Bonnet term. Therefore it does not create neither double layers nor thin shells.

It has been demonstrated that there is no “external pressure” for any type of null singular hypersurface. For spherically symmetric lightlike singular hypersurfaces additionally the “external flux” is equal to zero and the system of motion equations is reduced to one which is expressed through the invariants of spherical geometry along with the Lichnerowicz conditions. In this case there are no double layers only thin shells.

Spherically symmetric null thin shells were investigated for spherically symmetric solutions of conformal gravity as an application, in particular, for various vacua and Vaidya-type solutions.

By virtue of Lichnerowicz conditions scalar curvature R_2 of the two-dimensional non-spherical part of the metric without conformal factor must be continuous on the null shell. Therefore the following combinations for two vacua are possible: matching a vacuum with a constant R_2 and a vacuum with a variable R_2, matching two vacuums with a variable R_2, matching two vacua with a coinciding constant R_2. In the first case, the hypersurface is an analogue of the double horizon for the vacuum with variable R_2; in other cases, junction is possible only if the metrics coincide up to a conformal factor.

With the addition of the Vaidya-type solution new possible matchings appear: Vaidya-type metric with vacuum with variable R_2 and two Vaidya-type metrics. In the first version, the null shell is actually the singular part of the Vaidya-type solution, in the second, they must coincide up to the conformal factor. Moreover the null shell does not emit in both cases.