

Fig. 19. Roof's behavior.

About the deformations the Table VIII demonstrates the minimum and maximum values and the Fig. 20 the components behavior.

Tabela VIII. Minimum and maximum deformations

Deformation	Minimum	Maximum
	$3.472 \cdot 10^{-10}$	$3.019 \cdot 10^{-4}$

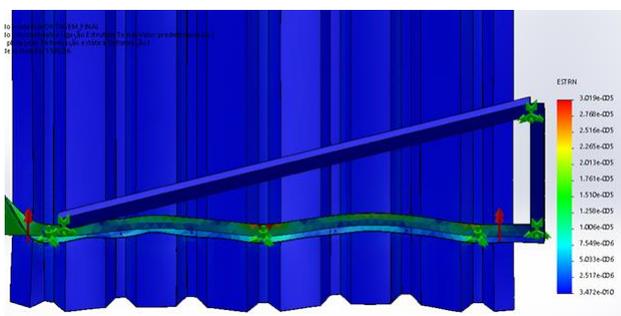


Fig. 20. Deformation of structural components.

#### 4. Conclusion

According to the computational simulations performed it is possible to note the great importance of analyzing the wind actions on the photovoltaic panels installed on rooftops as well as the structural behavior of the supports and its attachment points.

There were no major stresses, deformations or displacements of the support structural elements since the mechanical characteristics of the materials are sufficient in relation to the actions applied in this study.

Even with small values of stress and deformations observe that on the diagonal angle bracket occurred higher stresses than on the angle bracket fixed on the roof but in the angle bracket-roof analysis occurred higher displacements.

It is worth noting the structural behavior which demonstrates higher stress concentrations around the attachment points for both angle bracket and roof, besides realizing that the higher displacements occur in the larger spans of the components that may indicate the need for more attachment points to support more demanding load situations.

It is prudent to be careful when designing screwed connections between supports and roofs, that should be done directly to the roof structure and not only on the tiles.

Future studies will go in the sense to perform new simulations considering higher wind velocities and form of attachment of the photovoltaic systems in order to observe the structural behavior in situations which are more demanding from a structural point of view willing to ensure greater safety for the system and take preventive decisions against possible accidents and losses.

#### References

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