

**Mura, T.; Shodja, H. M.; Lin, T. Y.; Safadi, A.; Makkawy, A.**

**The determination of the elastic field of a pentagonal star shaped inclusion.** (English)

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This paper shows that the elastic field is uniform in a pentagonal star (five-pointed star) shaped inclusion when an eigenstrain is distributed uniformly in this inclusion. It is also found that for a Jewish star (star of David or six-points star) subjected to a uniform eigenstrain, the stress field is not uniform in the inclusion. These results also hold for two-dimensional plane strain cases. Furthermore, these analytical results are confirmed experimentally by photoelasticity method and also confirmed numerically by the finite element method.

**MSC:**

[74B05](#) Classical linear elasticity

[74S05](#) Finite element methods applied to problems in solid mechanics

[74-05](#) Experimental work for problems pertaining to mechanics of deformable solids

Cited in **15** Documents

**Keywords:**

[nonuniform elastic field](#); [uniform elastic field](#); [six-points star](#); [uniform eigenstrain](#); [finite element method](#)