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Behaviour of dislocations near phaseboundaries in the anisotropiclinear elasticity theory

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Abstract : The image force undergone by amatrix dislocations close and parallel to aninterphase boundary is studied in Ag-X bicrystalswith X : Pb, Cu and Ni for disorientations rangingbetween 0° and 90°. The elastic energy of dislocationboundaryinteraction is calculated within theframework of anisotropic linear elasticity. It isrelated to the difference of the two metals shearmoduli. It is about a few hundred pico Joule permeter. The image force can be repulsive or attractiveaccording to the sign and the intensity of shearmoduli difference. The isoenergy maps have varioussymmetries according to the disorientation.

Keywords : nterphase Boundary, Dislocation, Elastic Interaction, Image Force, Anisotropic elasticity, CFC Structure.