$(d \ln C_I/d \ln r)$. For sodium $(d \ln C_E/d \ln r)$ has a value of 7·3 while $(d \ln C_I/d \ln r)$ cannot be directly determined. If one assumes $(d \ln C_I/d \ln r)$ is equal to 17 as is the case for Cu, Ag, and Au, then the pressure experiment rules out an ionic contribution. It should be emphasized that the major contribution to the elastic constant is the electrostatic stiffness which accounts almost entirely for the observed value of C' and 90% of the value of C_{44} if one adjusts Z^2_{eff} to a value of 1·1. It is not clear why the observed anisotropy is high in sodium while in potassium its value is almost equal to the electrostatic value.

Another possible contribution to the elastic constants can arise from the Fermi energy. BLUME[13] has included a Fermi contribution to the shear stiffnesses of lithium. The results of his calculation yielded values of C_F and C'_F which are both negative. These values were consistent with the observed elastic constants and the high anisotropy of lithium. The Fermi surface of sodium, however, is very nearly spherical and lies well within the Brillouin zone so that the Fermi contribution to the elastic constants is negligible for this metal.

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