



JK (Jock) Mackenzie in April 2013

In 1949, F. C. Frank proposed over morning coffee the problem of determining the greatest possible angle of disorientation of two cubes. The answer to the analogous problem for squares in two dimensions is of course 45° , but in three dimensions the answer is not at all obvious. However, by a tedious consideration of all possibilities it can be shown that the maximum value of the angle of disorientation is $2 \arccos \frac{1}{2}(2 + \sqrt{2}) = 62.80^\circ$.

Biometrika 1957 44 205

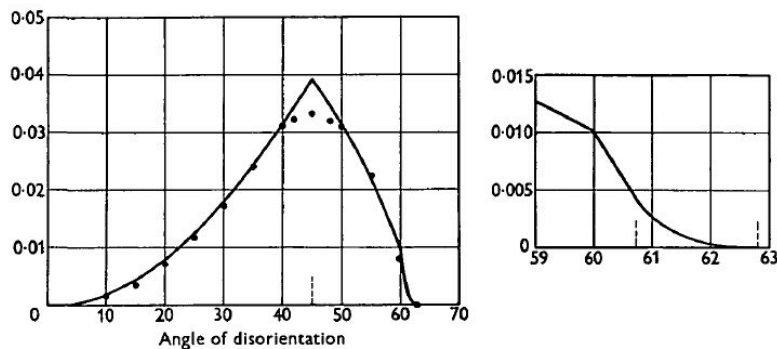


Fig. 2. The density function for the angle of disorientation. The ordinate is probability density when the angle is measured in degrees and the dots are estimates derived from random sampling.

Biometrika 1958 45 229

Among Jock's other notable achievements is his classic paper (together with J Bowles) Crystallography of Martensite Transformations (Acta Met. 1954 2 129)