$- am)^2 + 4amA$

$+ am)^2 - 4am$

$P + a) + (1 + A$

$- A + am) + 2mP$

$0, (q)^{1/2} < (1 + A +$

$> (q)^{1/2}$ for all $P \geq 0$

B2 is appropriately wr

form

$+ am) + 2mP - (q)$

$+ am) + 2mP + (q)$

ressure for aluminum

nswer the question for $C > 0$, $(K_0' - m) <$ write equation B3 for q with $A = (K_0' - m)$, $a = -2(K_0' - m)/C$:

$$\left[1 - \frac{2(K_0' - m)^2}{C} - \frac{2m(K_0' - m)}{C}\right]^2 + \frac{8m(K_0' - m)}{C}$$

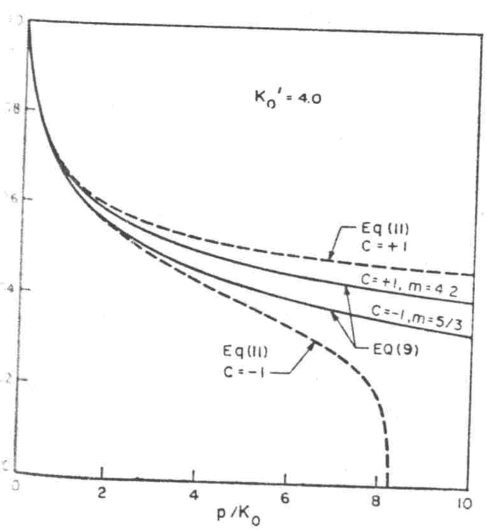
$$\left[1 + \frac{2K_0'(m - K_0')}{C}\right]^2 - \frac{8m(m - K_0')}{C} \qquad \text{(B5)}$$

note that both the second term and the are root of the first term in the above ex-sion are positive; therefore, $2bx + c >$ for all $P \geq 0$, and we again use the rithmic form (Equation B4) to evaluate ation B2.

After having evaluated the integral, equa-n B1, for both cases subject to $V = 1$ when $= 0$ we then write the equation for V (equa-n 9).

Appendix C

As has been emphasized by *Anderson* [1966], success of Murnaghan's equation 10 is spec-ular because the entire curve of K/K_0 versus K_0 is determined by a single parameter K_0'. oreover, this parameter is not adjusted to fit all the data, but only the low pressure ultrasonic data on wave transit times versus p. (This is presumed to give, after calculations using thermal data to convert from adiabatic to isothermal values of dK/dp, the true limit of dK/dp as $p \to 0$.) It was desired to see whether a one-parameter fit (in which the parameter is the initial value of dK/dp) is sensitive to the assumption of exact linearity of K. To gain some insight into this question, we have compared V predicted from the linear assumption (given by equation 10) with V predicted from each of two exponential formulas.



9. Comparison of extrapolation formulas for $C = \pm 1$ (see text).

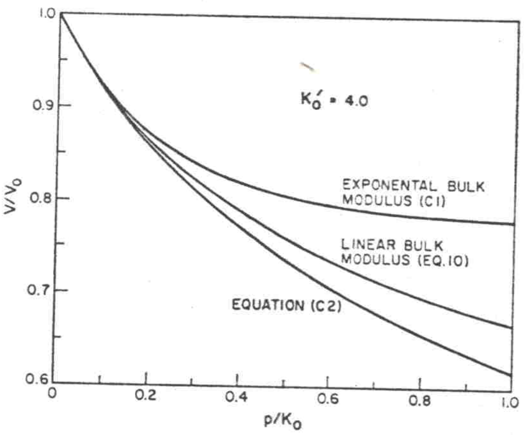


Fig. 10. Comparison of extrapolation formulas based on the linear and exponential assumptions for the bulk modulus (see text).

$$\frac{K}{K_0} = \exp\left(\frac{K_0'p}{K_0}\right) \qquad \text{(C1)}$$

$$\frac{K}{K_0} = \exp\left(\frac{K_0'p}{K}\right) \qquad \text{(C2)}$$

With K given by equation 6 the above expressions can be integrated to obtain the required formulas for the volume ratio. From (C1),

$$V = \exp\left\{\frac{1}{K_0'}\left[\exp\left(-K_0'P\right) - 1\right]\right\} \qquad \text{(C1}a\text{)}$$

and from (C2)

$$V = \exp\left\{-\frac{1}{K_0'}\left[\ln\frac{K}{K_0} + \frac{1}{2}\left(\ln\frac{K}{K_0}\right)^2\right]\right\}$$

$$P = \frac{1}{K_0'}\left(\frac{K}{K_0}\ln\frac{K}{K_0}\right) \qquad \text{(C2}a\text{)}$$

The assumption (C2) leads to the above pair of equations C2a, from which calculations can