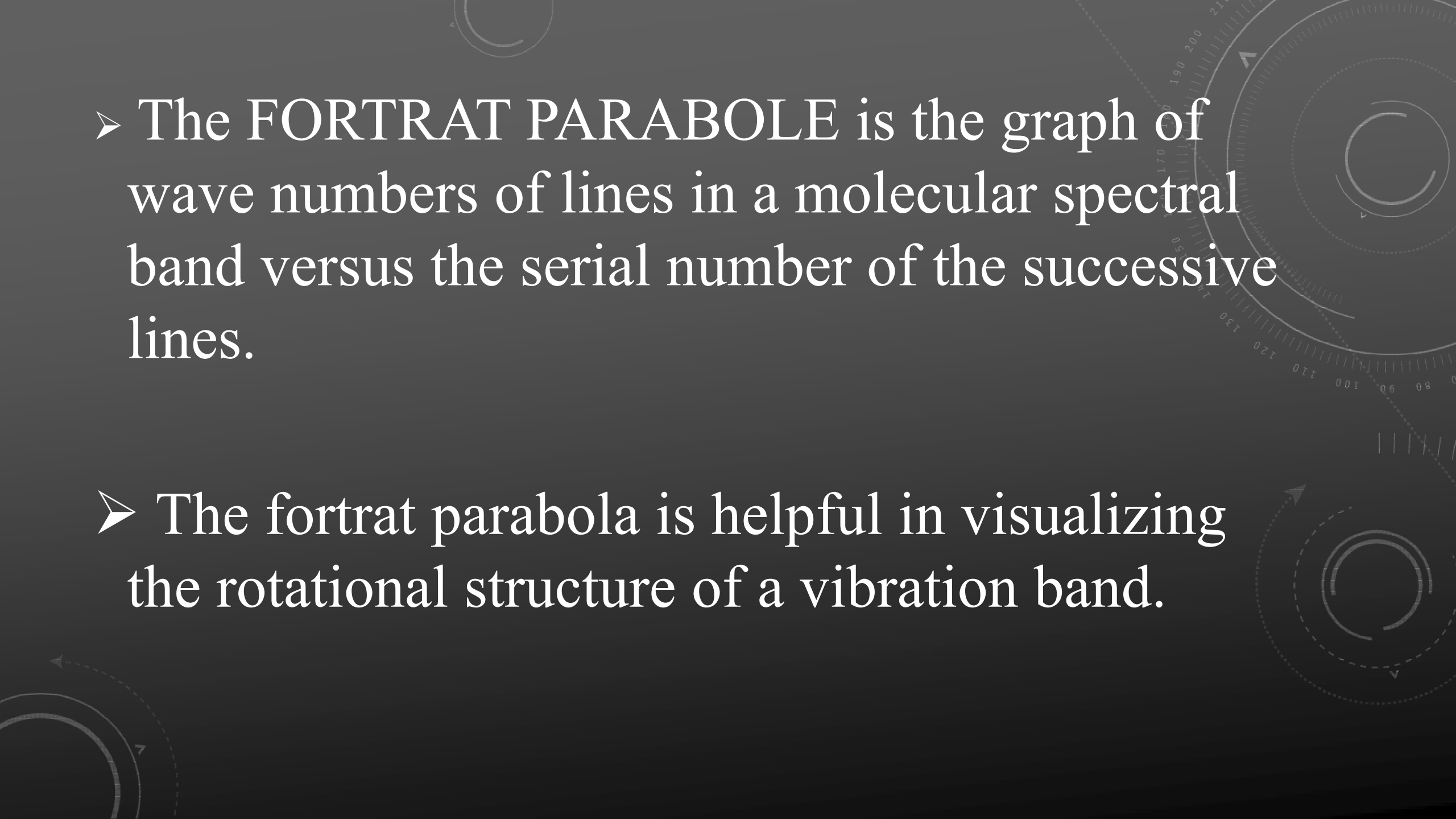


The background features a dark grey gradient with several technical diagrams. A prominent circular scale on the left side has numerical markings from 40 to 260 in increments of 10. Other diagrams include concentric circles, dashed lines, and arrows, suggesting a technical or scientific context.

THE FORTRAT PARABOLE

The background features several faint, overlapping circular patterns. On the right side, there is a scale with numerical markings from 0 to 200, increasing in increments of 10. The text is white and set against a dark grey background.

➤ The FORTRAT PARABOLE is the graph of wave numbers of lines in a molecular spectral band versus the serial number of the successive lines.

➤ The fortrat parabola is helpful in visualizing the rotational structure of a vibration band.

➤ Frequencies of the lines in Q, P and R branches are,

$$\bar{\nu}_{P,R} = \bar{\nu}_{v',v''} + (B' + B'')m + (B' - B'')m^2$$

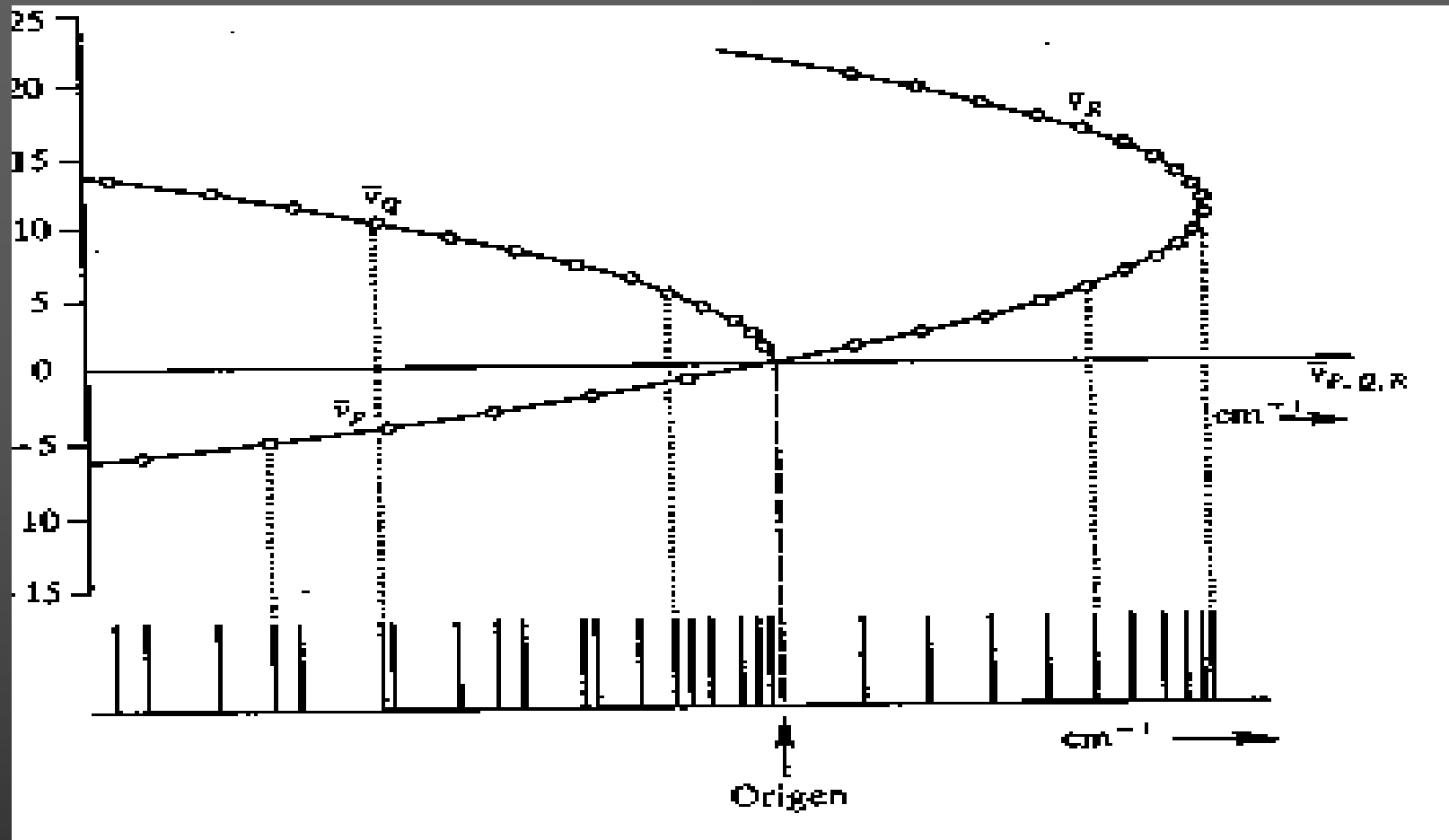
$$\bar{\nu}_Q = \bar{\nu}_{v',v''} + (B' - B'')J(J + 1)$$

$$\bar{v}_{P,R} = \bar{v}_{v',v''} + (B' + B'')p + (B' - B'')p^2$$

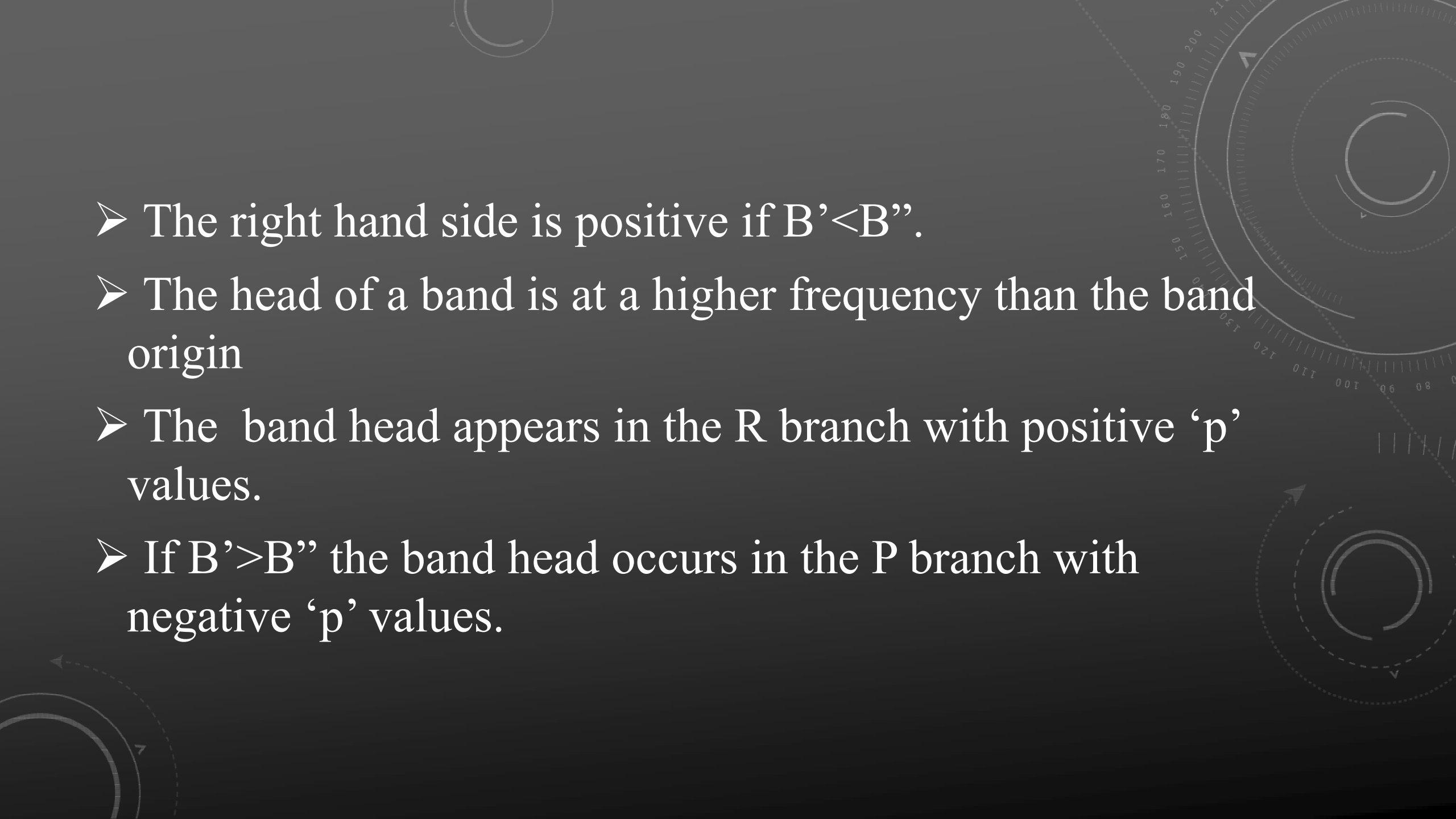
$$\bar{v}_Q = \bar{v}_{v',v''} + (B' - B'')q + (B' - B'')q^2$$

‘p’ takes both positive and negative values

‘q’ takes only positive values



The forttrat parabola for $B' < B''$ (H-band head, N-band origin)

- 
- The right hand side is positive if $B' < B''$.
 - The head of a band is at a higher frequency than the band origin
 - The band head appears in the R branch with positive 'p' values.
 - If $B' > B''$ the band head occurs in the P branch with negative 'p' values.