Ambiguità in Doppler e PRF stagger

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Blind Speed (I)

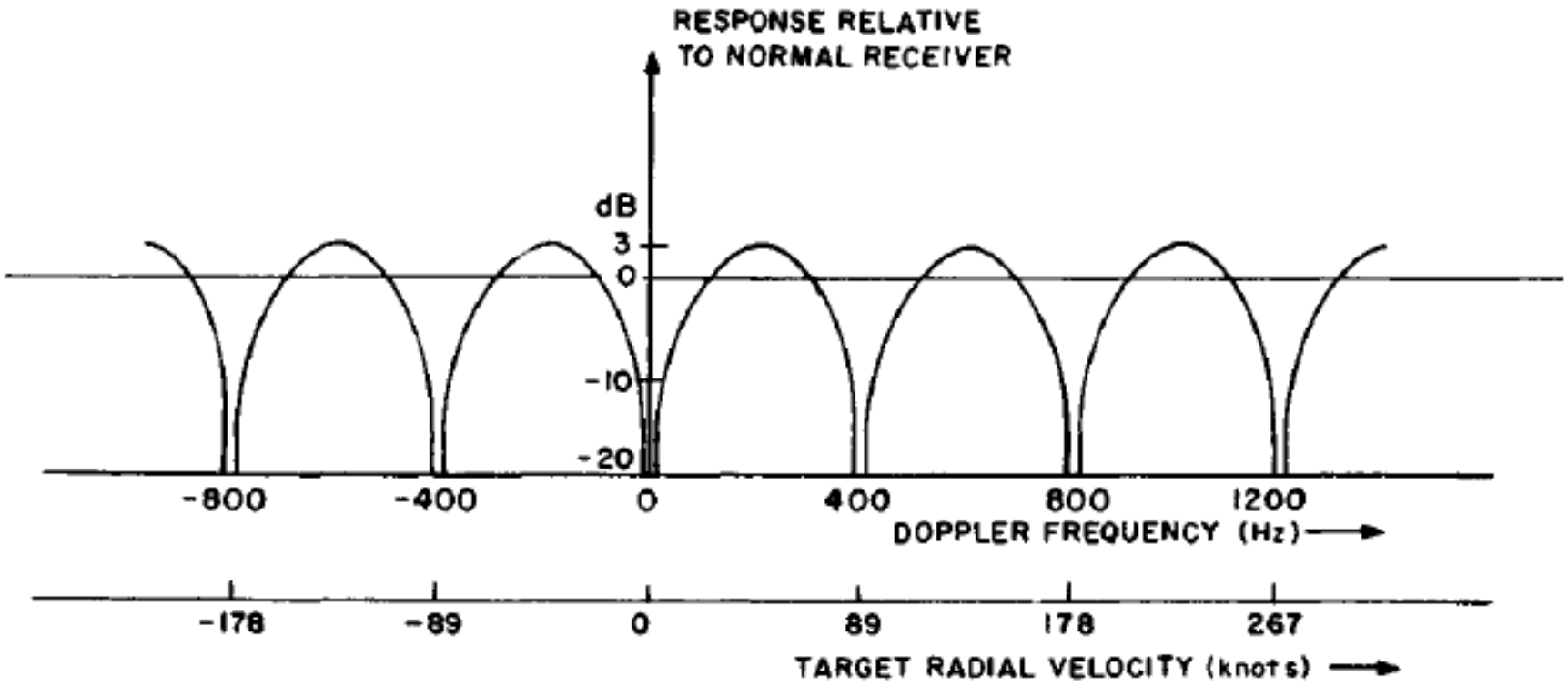

FIG. 15.8 MTI system response for 1300-MHz radar operating at 400 pps.

Shrader & Gregers-Hansen "MTI Radar"
in M. Skolnik – Radar Handbook 2° Ed.

Blind Speed (II)

The optimum choice of the stagger ratio depends on the velocity range over which there must be no blind speeds and on the permissible depth of the first null in the velocity response curve. For many applications, a four-period stagger ratio is best, and a good set of stagger ratios can be obtained by adding the first blind speed (in V/V_B) to the numbers -3, 2, -1, 3 (or 3, -2, 1, -3). Thus, in Fig. 15.31, where the first blind speed occurs at about $V/V_B = 28$, the stagger ratio is 25:30:27:31. (Alternating the long and short periods keeps the transmitter duty cycle as nearly constant as possible, as well as ensuring good response at the first null where $V = V_B$.)

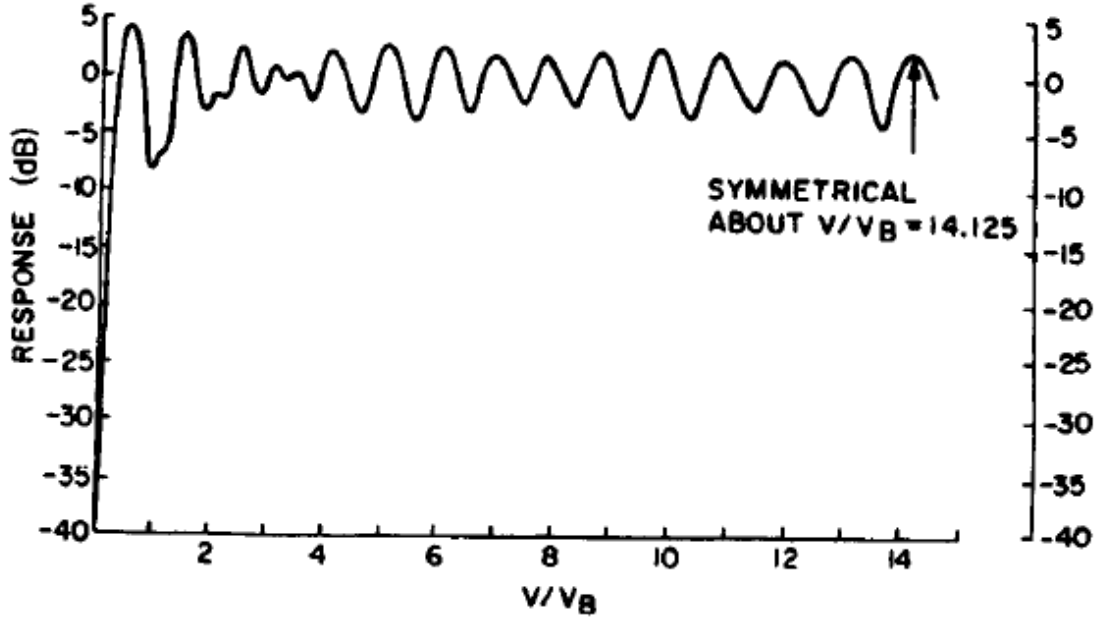

FIG. 15.31 Velocity response curve: dual canceler, no feedback, 25:30:27:31 pulse-interval ratio.

Blind Speed (III)

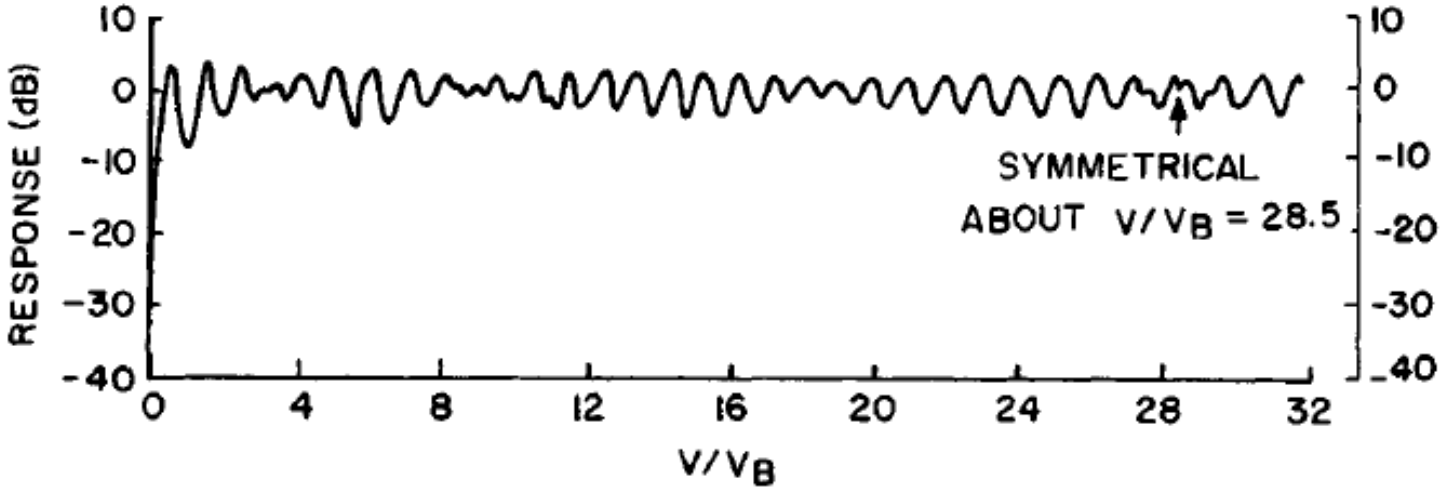

FIG. 15.32 Velocity response curve: three-pulse binomial canceler, 51:62:53:61:58 pulse-interval ratio.

If using four interpulse periods permits the first null to be too deep, then five interpulse periods may be used, with the stagger ratio obtained by adding the first blind speed to the numbers −6, +5, −4, +4, +1. Figure 15.32 shows a velocity response curve for five pulse intervals. The depth of the first null can be predicted from Fig. 15.39, which is discussed later.

Blind Speed (IV)

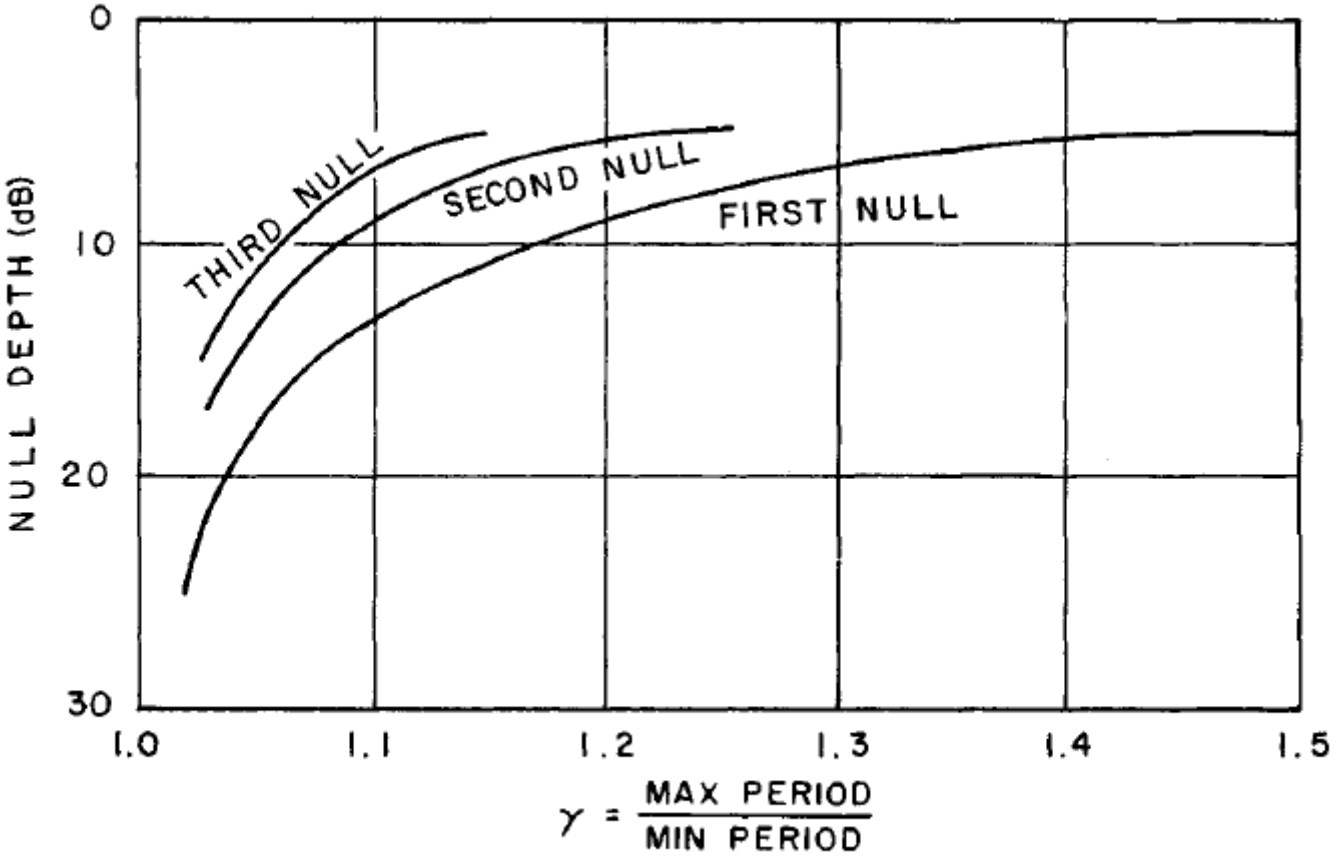

FIG. 15.39 Approximate depth of nulls in the velocity response curve for pulse-to-pulse staggered MTI.

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