3. **Notch Filtering:** Notch filters are of two types i.e., Notch pass filter and Notch reject filter. Depending on the type, the filter can reject or can pass the frequencies present in a neighbourhood of the centre frequency. To get the accurate results, notch filter should be in symmetric pairs about the origin.

Notch Filters:

A Notch filter Reject (or pass) frequencies in a predefined neighborhood about the centre of the frequency rectangle. It is constructed as products of high pass filters whose centers have been translated to the centers of the notches. The general form is defined as

$$H_{NR}(u,v) = \prod_{k=1}^{Q} H_k(u,v) H_{-k}(u,v)$$

centre at (u_k, v_k) — centre at $(-u_k, -v_k)$

Where $H_k(u,v)$ and $H_{-k}(u,v)$ are high pass filters whose centers are at (u_k, v_k) and $(-u_k, -v_k)$ respectively. These centers are specified with respect to the center of the frequency rectangle (M/2, N/2).

A *Notch Pass filter* (NP) is obtained from a *Notch Reject filter* (NR) using:

$$H_{NP}(u,v) = 1 - H_{NR}(u,v)$$