

A band-elimination filter relates to radiotechnical systems for transmitting-receiving path and provision of communication quality and may be used in compensators of automatic control systems. The filter is characterized by a fractional rational function of second order

$$W(p) = \frac{b_0 + p^2}{a_0 + a_1 p + p^2},$$

where $W(p)$ - operator fractional rational transfer function, p - function statement, $b_0 = a_0 = \omega_r^2$, ω_r - trap frequency, $a_1 = \omega_r \cdot \xi$, ξ - attenuation coefficient, $\xi = 1/q$, q - filter quality.

The filter comprises two functional modules, multipliers, a frequency corrector and an adder. Coefficients of fractional rational transfer function are represented through filter parameters that provides universality of the prolongate device, allows solving assigned task of filter synthesis over a wide range of characteristics thereof. Second derivative feedback of intermediate signal serves for stability augmentation and increase of filter operation accuracy.