Here are some **key parameters of FIR filters**:

* [**Coefficients**: FIR filters are defined by their coefficients, which determine the filter's response to input signals.](https://www.bing.com/ck/a?!&&p=17e11e019d24dacbf5b3d7766843e242a6114616c2abfaf0358f33d985823c83JmltdHM9MTc1NDA5MjgwMA&ptn=3&ver=2&hsh=4&fclid=2cec2f00-889b-61b0-1f32-3d0b890060f6&psq=parameters+for+FIR+filters&u=a1aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvRmluaXRlX2ltcHVsc2VfcmVzcG9uc2U&ntb=1)
* [**Filter Order**: The order of the filter (number of coefficients minus one) affects the filter's performance and complexity.](https://www.bing.com/ck/a?!&&p=17e11e019d24dacbf5b3d7766843e242a6114616c2abfaf0358f33d985823c83JmltdHM9MTc1NDA5MjgwMA&ptn=3&ver=2&hsh=4&fclid=2cec2f00-889b-61b0-1f32-3d0b890060f6&psq=parameters+for+FIR+filters&u=a1aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvRmluaXRlX2ltcHVsc2VfcmVzcG9uc2U&ntb=1)
* [**Phase Delay and Group Delay**: For linear phase FIR filters, the phase delay and group delay are constant, which preserves the wave shape of signals in the passband.](https://www.bing.com/ck/a?!&&p=118de44e9de6b89144dd0a7ec8b37ecf668575bbb0ca28b9f7539b2799fdc401JmltdHM9MTc1NDA5MjgwMA&ptn=3&ver=2&hsh=4&fclid=2cec2f00-889b-61b0-1f32-3d0b890060f6&psq=parameters+for+FIR+filters&u=a1aHR0cHM6Ly93d3cubWF0aHdvcmtzLmNvbS9oZWxwL3NpZ25hbC91Zy9maXItZmlsdGVyLWRlc2lnbi5odG1s&ntb=1)
* [**Impulse Response**: The impulse response of an FIR filter is finite and can be designed using methods like impulse response truncation.](https://www.bing.com/ck/a?!&&p=c8ce6c17859e0faad94ae7adc9325414e85fc61fb0f7ff8a8e98b9d50fcfebabJmltdHM9MTc1NDA5MjgwMA&ptn=3&ver=2&hsh=4&fclid=2cec2f00-889b-61b0-1f32-3d0b890060f6&psq=parameters+for+FIR+filters&u=a1aHR0cHM6Ly93d3cuc3RhZmYubmNsLmFjLnVrL29saXZlci5oaW50b24vZWVlMzA1L0NoYXB0ZXI0LnBkZg&ntb=1)
* [**Frequency Response**: The frequency response describes how the filter affects different frequency components of the input signal.](https://www.bing.com/ck/a?!&&p=e93b4f8f2c71b3d1084513948c8ff8e4b48f47170a7a19db34162cec89a99b2aJmltdHM9MTc1NDA5MjgwMA&ptn=3&ver=2&hsh=4&fclid=2cec2f00-889b-61b0-1f32-3d0b890060f6&psq=parameters+for+FIR+filters&u=a1aHR0cHM6Ly9kc3BndXJ1LmNvbS9kc3AvZmFxcy9maXIvcHJvcGVydGllcy8&ntb=1)

These parameters are essential for designing and implementing FIR filters in digital signal processing applications.

Useful links :

[Design Low pass filter using MATLAB](https://in.mathworks.com/help/dsp/ug/designing-low-pass-fir-filters.html)  
[Practical Introduction to Digital Filter Design](https://in.mathworks.com/help/signal/ug/practical-introduction-to-digital-filter-design.html)  
[How to design and implement a digital low-pass filter on an Arduino](https://youtu.be/HJ-C4Incgpw?si=qGD0OCyAmYDPaoa2)  
Finite [Impulse Response](https://ccrma.stanford.edu/~jos/filters/Impulse_Response_Representation.html) [Digital Filters](https://ccrma.stanford.edu/~jos/filters/)  
[Finite Impulse Response Digital Filters](https://ccrma.stanford.edu/~jos/filters/FIR_Digital_Filters.html)  
[Realization of Digital Filters](https://www.ee.cityu.edu.hk/~hcso/ee3202_9.pdf)  
[FIR Filter Design and Software Implementation](https://www.youtube.com/watch?v=uNNNj9AZisM&t=1s)  
[Kaiser Window](https://in.mathworks.com/help/signal/ug/kaiser-window.html) : ratio of the main lobe energy to the side lobe energy is maximized

What special types of FIR filters are there?

Aside from “regular” and “extra crispy” there are:

* [*Boxcar*](https://zipcpu.com/dsp/2017/10/16/boxcar.html) – Boxcar FIR filters are simply filters in which each coefficient is 1.0. Therefore, for an N-tap boxcar, the output is just the sum of the past N samples. Because boxcar FIRs can be implemented using only adders, they are of interest primarily in hardware implementations, where multipliers are expensive to implement.
* [*Hilbert Transformer*](https://cdn.intechopen.com/pdfs/39362/InTech-Digital_fir_hilbert_transformers_fundamentals_and_efficient_design_methods.pdf)– Hilbert Transformers shift the phase of a signal by 90 degrees. They are used primarily for creating the imaginary part of a complex signal, given its real part.
* [*Differentiator*](https://in.mathworks.com/help/dsp/ref/differentiatorfilter.html)– Differentiators have an amplitude response which is a linear function of frequency. They are not very popular nowadays, but are sometimes used for FM demodulators.
* [*Lth-Band*](https://in.mathworks.com/help/dsp/ug/fir-nyquist-l-th-band-filter-design.html)– Also called “Nyquist” filters, these filters are a special class of filters used primarily in multirate applications. Their key selling point is that one of every *L* coefficients is zero–a fact which can be exploited to reduce the number of multiply-accumulate operations required to implement the filter. (The famous “half-band” filter is actually an Lth-band filter, with L=2.)
* [*Raised-Cosine*](https://in.mathworks.com/help/comm/ug/raised-cosine-filtering.html)– This is a special kind of filter that is sometimes used for digital data applications. (The frequency response in the passband is a cosine shape which has been “raised” by a constant.)
* *Lots of others.*