

Re: Low pass filter, cut off 500 Hz, short response time...

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Viram wrote:

- > *I'm trying to design a LP-filter with a cut off at around 500 Hz. My*
- > *problem is getting a short response time and low/no resonance peak.*
- What
- > *order should the filter be? I'm currently trying with a simple*
- > *LC-filter...*

You need to get hold of a decent text on filter design – I use the "Electronic Filter Design Handbook" by Arthur B. Williams and Fred J. Taylor – ISBN 0-07-070434-1. Since then there has been a third edition (ISBN 0-07-070430-9) which is supposed to be even better, but it seems to be out of print – www.amazon.com offers three second hand copies for about \$130. You should be able to find it – or something very like it – in a university library.

The usual choice for what you seem to want to be doing is a "linear-phase" or "Bessel filter", though a "synchronously tuned" filter (consisting of identical multiple poles) actually gives fastest settling for a given number of poles, with the step getting to better than 99% after five time constants. Adding more poles makes the step steeper at the 50% point, and pushes the 50% point back from around one time constant at one pole to closer to three at ten poles.

A simple LCR filter is two poles ...

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