

iir1

Generated by Doxygen 1.8.13

## Contents

<b>1</b>	<b>Namespace Index</b>	<b>2</b>
1.1	Namespace List . . . . .	2
<b>2</b>	<b>Hierarchical Index</b>	<b>2</b>
2.1	Class Hierarchy . . . . .	2
<b>3</b>	<b>Class Index</b>	<b>7</b>
3.1	Class List . . . . .	7
<b>4</b>	<b>Namespace Documentation</b>	<b>11</b>
4.1	lir::Bessel Namespace Reference . . . . .	11
4.1.1	Detailed Description . . . . .	11
4.2	lir::Butterworth Namespace Reference . . . . .	12
4.2.1	Detailed Description . . . . .	12
4.3	lir::ChebyshevI Namespace Reference . . . . .	12
4.3.1	Detailed Description . . . . .	12
4.4	lir::ChebyshevII Namespace Reference . . . . .	13
4.4.1	Detailed Description . . . . .	13
4.5	lir::Elliptic Namespace Reference . . . . .	13
4.5.1	Detailed Description . . . . .	13
4.6	lir::Legendre Namespace Reference . . . . .	14
4.6.1	Detailed Description . . . . .	14
4.7	lir::RBJ Namespace Reference . . . . .	14
4.7.1	Detailed Description . . . . .	14

<b>5</b>	<b>Class Documentation</b>	<b>15</b>
5.1	<a href="#">lir::RBJ::AllPass Struct Reference</a>	15
5.2	<a href="#">lir::Butterworth::AnalogLowPass Class Reference</a>	15
5.3	<a href="#">lir::ChebyshevI::AnalogLowPass Class Reference</a>	15
5.4	<a href="#">lir::Elliptic::AnalogLowPass Class Reference</a>	16
5.5	<a href="#">lir::Legendre::AnalogLowPass Class Reference</a>	16
5.6	<a href="#">lir::Bessel::AnalogLowPass Class Reference</a>	16
5.7	<a href="#">lir::ChebyshevII::AnalogLowPass Class Reference</a>	17
5.8	<a href="#">lir::Bessel::AnalogLowShelf Class Reference</a>	17
5.9	<a href="#">lir::Butterworth::AnalogLowShelf Class Reference</a>	17
5.10	<a href="#">lir::ChebyshevI::AnalogLowShelf Class Reference</a>	18
5.11	<a href="#">lir::ChebyshevII::AnalogLowShelf Class Reference</a>	18
5.12	<a href="#">lir::RootFinderBase::Array Struct Reference</a>	18
5.13	<a href="#">lir::ChebyshevII::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	18
5.13.1	Detailed Description	19
5.13.2	Member Function Documentation	19
5.14	<a href="#">lir::Elliptic::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	19
5.14.1	Member Function Documentation	20
5.15	<a href="#">lir::Legendre::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	20
5.16	<a href="#">lir::Bessel::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	21
5.16.1	Detailed Description	21
5.16.2	Member Function Documentation	21
5.17	<a href="#">lir::ChebyshevI::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	22
5.17.1	Detailed Description	22
5.17.2	Member Function Documentation	22
5.18	<a href="#">lir::Butterworth::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	23
5.18.1	Detailed Description	23
5.18.2	Member Function Documentation	23
5.19	<a href="#">lir::RBJ::BandPass1 Struct Reference</a>	24
5.19.1	Detailed Description	24

5.19.2 Member Function Documentation . . . . .	24
5.20 <a href="#">lir::RBJ::BandPass2 Struct Reference</a> . . . . .	25
5.20.1 Detailed Description . . . . .	25
5.20.2 Member Function Documentation . . . . .	25
5.21 <a href="#">lir::Elliptic::BandPassBase Struct Reference</a> . . . . .	26
5.22 <a href="#">lir::Butterworth::BandPassBase Struct Reference</a> . . . . .	26
5.23 <a href="#">lir::ChebyshevI::BandPassBase Struct Reference</a> . . . . .	26
5.24 <a href="#">lir::Legendre::BandPassBase Struct Reference</a> . . . . .	27
5.25 <a href="#">lir::Bessel::BandPassBase Struct Reference</a> . . . . .	27
5.26 <a href="#">lir::ChebyshevII::BandPassBase Struct Reference</a> . . . . .	28
5.27 <a href="#">lir::BandPassTransform Class Reference</a> . . . . .	28
5.28 <a href="#">lir::Butterworth::BandShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	28
5.28.1 Detailed Description . . . . .	28
5.28.2 Member Function Documentation . . . . .	29
5.29 <a href="#">lir::ChebyshevII::BandShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	29
5.29.1 Detailed Description . . . . .	29
5.30 <a href="#">lir::ChebyshevI::BandShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	30
5.30.1 Detailed Description . . . . .	30
5.31 <a href="#">lir::RBJ::BandShelf Struct Reference</a> . . . . .	30
5.32 <a href="#">lir::ChebyshevI::BandShelfBase Struct Reference</a> . . . . .	31
5.33 <a href="#">lir::Butterworth::BandShelfBase Struct Reference</a> . . . . .	31
5.34 <a href="#">lir::ChebyshevII::BandShelfBase Struct Reference</a> . . . . .	31
5.35 <a href="#">lir::ChebyshevII::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	32
5.35.1 Detailed Description . . . . .	32
5.35.2 Member Function Documentation . . . . .	32
5.36 <a href="#">lir::Elliptic::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	33
5.36.1 Member Function Documentation . . . . .	33
5.37 <a href="#">lir::Legendre::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	34
5.38 <a href="#">lir::ChebyshevI::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	34
5.38.1 Detailed Description . . . . .	34

5.38.2	Member Function Documentation	34
5.39	<a href="#">lir::Bessel::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	35
5.39.1	Detailed Description	35
5.39.2	Member Function Documentation	35
5.40	<a href="#">lir::RBJ::BandStop Struct Reference</a>	36
5.40.1	Detailed Description	36
5.40.2	Member Function Documentation	36
5.41	<a href="#">lir::Butterworth::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	37
5.41.1	Detailed Description	37
5.41.2	Member Function Documentation	37
5.42	<a href="#">lir::Bessel::BandStopBase Struct Reference</a>	38
5.43	<a href="#">lir::Elliptic::BandStopBase Struct Reference</a>	38
5.44	<a href="#">lir::ChebyshevI::BandStopBase Struct Reference</a>	39
5.45	<a href="#">lir::Legendre::BandStopBase Struct Reference</a>	39
5.46	<a href="#">lir::Butterworth::BandStopBase Struct Reference</a>	39
5.47	<a href="#">lir::ChebyshevII::BandStopBase Struct Reference</a>	40
5.48	<a href="#">lir::BandStopTransform Class Reference</a>	40
5.49	<a href="#">lir::Biquad Class Reference</a>	41
5.50	<a href="#">lir::BiquadBase Class Reference</a>	41
5.51	<a href="#">lir::BiquadPoleState Struct Reference</a>	42
5.52	<a href="#">lir::Cascade Class Reference</a>	42
5.53	<a href="#">lir::CascadeStages&lt; MaxStages, StateType &gt; Class Template Reference</a>	43
5.54	<a href="#">lir::ComplexPair Struct Reference</a>	43
5.55	<a href="#">lir::DirectFormI Class Reference</a>	43
5.56	<a href="#">lir::DirectFormII Class Reference</a>	43
5.57	<a href="#">lir::EnvelopeFollower&lt; Channels, Value &gt; Class Template Reference</a>	44
5.58	<a href="#">lir::ChebyshevII::HighPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	44
5.58.1	Detailed Description	44
5.58.2	Member Function Documentation	44
5.59	<a href="#">lir::Butterworth::HighPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	45

5.59.1 Detailed Description . . . . .	45
5.59.2 Member Function Documentation . . . . .	45
5.60 <a href="#">lir::Elliptic::HighPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	46
5.60.1 Member Function Documentation . . . . .	46
5.61 <a href="#">lir::Bessel::HighPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	46
5.61.1 Detailed Description . . . . .	47
5.61.2 Member Function Documentation . . . . .	47
5.62 <a href="#">lir::Legendre::HighPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	47
5.63 <a href="#">lir::ChebyshevI::HighPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	48
5.63.1 Detailed Description . . . . .	48
5.63.2 Member Function Documentation . . . . .	48
5.64 <a href="#">lir::RBJ::HighPass Struct Reference</a> . . . . .	49
5.64.1 Detailed Description . . . . .	49
5.64.2 Member Function Documentation . . . . .	49
5.65 <a href="#">lir::Elliptic::HighPassBase Struct Reference</a> . . . . .	50
5.66 <a href="#">lir::ChebyshevI::HighPassBase Struct Reference</a> . . . . .	50
5.67 <a href="#">lir::Butterworth::HighPassBase Struct Reference</a> . . . . .	51
5.68 <a href="#">lir::Legendre::HighPassBase Struct Reference</a> . . . . .	51
5.69 <a href="#">lir::Bessel::HighPassBase Struct Reference</a> . . . . .	51
5.70 <a href="#">lir::ChebyshevII::HighPassBase Struct Reference</a> . . . . .	52
5.71 <a href="#">lir::HighPassTransform Class Reference</a> . . . . .	52
5.72 <a href="#">lir::Butterworth::HighShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	53
5.72.1 Detailed Description . . . . .	53
5.72.2 Member Function Documentation . . . . .	53
5.73 <a href="#">lir::ChebyshevII::HighShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	54
5.73.1 Detailed Description . . . . .	54
5.74 <a href="#">lir::ChebyshevI::HighShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a> . . . . .	54
5.74.1 Detailed Description . . . . .	54
5.75 <a href="#">lir::RBJ::HighShelf Struct Reference</a> . . . . .	55
5.76 <a href="#">lir::ChebyshevI::HighShelfBase Struct Reference</a> . . . . .	55

5.77	<a href="#">lir::Butterworth::HighShelfBase Struct Reference</a>	56
5.78	<a href="#">lir::ChebyshevII::HighShelfBase Struct Reference</a>	56
5.79	<a href="#">lir::Layout&lt; MaxPoles &gt; Class Template Reference</a>	56
5.80	<a href="#">lir::LayoutBase Class Reference</a>	57
5.81	<a href="#">lir::ChebyshevII::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	57
5.81.1	Detailed Description	58
5.81.2	Member Function Documentation	58
5.82	<a href="#">lir::Elliptic::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	58
5.82.1	Member Function Documentation	59
5.83	<a href="#">lir::Bessel::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	59
5.83.1	Detailed Description	59
5.83.2	Member Function Documentation	60
5.84	<a href="#">lir::Legendre::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	60
5.85	<a href="#">lir::ChebyshevI::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	60
5.85.1	Detailed Description	61
5.85.2	Member Function Documentation	61
5.86	<a href="#">lir::RBJ::LowPass Struct Reference</a>	61
5.86.1	Detailed Description	62
5.86.2	Member Function Documentation	62
5.87	<a href="#">lir::Butterworth::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	62
5.87.1	Detailed Description	63
5.87.2	Member Function Documentation	63
5.88	<a href="#">lir::ChebyshevI::LowPassBase Struct Reference</a>	63
5.89	<a href="#">lir::Elliptic::LowPassBase Struct Reference</a>	64
5.90	<a href="#">lir::Bessel::LowPassBase Struct Reference</a>	64
5.91	<a href="#">lir::Butterworth::LowPassBase Struct Reference</a>	64
5.92	<a href="#">lir::Legendre::LowPassBase Struct Reference</a>	65
5.93	<a href="#">lir::ChebyshevII::LowPassBase Struct Reference</a>	65
5.94	<a href="#">lir::LowPassTransform Class Reference</a>	66
5.95	<a href="#">lir::ChebyshevII::LowShelf&lt; MaxOrder, StateType &gt; Struct Template Reference</a>	66

5.95.1 Detailed Description . . . . .	66
5.96 lir::ChebyshevI::LowShelf< MaxOrder, StateType > Struct Template Reference . . . . .	66
5.96.1 Detailed Description . . . . .	67
5.96.2 Member Function Documentation . . . . .	67
5.97 lir::RBJ::LowShelf Struct Reference . . . . .	67
5.98 lir::Butterworth::LowShelf< MaxOrder, StateType > Struct Template Reference . . . . .	68
5.98.1 Detailed Description . . . . .	68
5.98.2 Member Function Documentation . . . . .	68
5.99 lir::ChebyshevII::LowShelfBase Struct Reference . . . . .	69
5.100 lir::Bessel::LowShelfBase Struct Reference . . . . .	69
5.101 lir::ChebyshevI::LowShelfBase Struct Reference . . . . .	69
5.102 lir::Butterworth::LowShelfBase Struct Reference . . . . .	70
5.103 lir::Custom::OnePole Struct Reference . . . . .	70
5.104 lir::PoleFilter< BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles > Struct Template Reference . . . . .	71
5.105 lir::PoleFilterBase< AnalogPrototype > Class Template Reference . . . . .	71
5.106 lir::PoleFilterBase2 Class Reference . . . . .	71
5.107 lir::PoleZeroPair Struct Reference . . . . .	72
5.108 lir::Legendre::PolynomialFinder< maxN > Class Template Reference . . . . .	73
5.109 lir::Legendre::PolynomialFinderBase Class Reference . . . . .	73
5.110 lir::RBJ::RBJbase Struct Reference . . . . .	73
5.110.1 Detailed Description . . . . .	74
5.111 lir::RootFinder< maxdegree > Struct Template Reference . . . . .	75
5.112 lir::RootFinderBase Class Reference . . . . .	75
5.113 lir::SlopeDetector< Channels, Value > Class Template Reference . . . . .	75
5.114 lir::Elliptic::Solver Class Reference . . . . .	75
5.115 lir::Cascade::Stage Struct Reference . . . . .	76
5.116 lir::BiquadBase::State< StateType > Struct Template Reference . . . . .	76
5.117 lir::Cascade::Storage Struct Reference . . . . .	76
5.118 lir::TransposedDirectFormI Class Reference . . . . .	76
5.119 lir::TransposedDirectFormII Class Reference . . . . .	77
5.120 lir::Custom::TwoPole Struct Reference . . . . .	77
5.121 lir::Bessel::Workspace< MaxOrder > Struct Template Reference . . . . .	77
5.122 lir::Legendre::Workspace< MaxOrder > Struct Template Reference . . . . .	77
5.123 lir::Bessel::WorkspaceBase Struct Reference . . . . .	78
5.124 lir::Legendre::WorkspaceBase Struct Reference . . . . .	78



<a href="#">Index</a>	79
-----------------------	----

## 1 Namespace Index

### 1.1 Namespace List

Here is a list of all documented namespaces with brief descriptions:

<a href="#">lir::Bessel</a>	11
<a href="#">lir::Butterworth</a>	12
<a href="#">lir::ChebyshevI</a>	12
<a href="#">lir::ChebyshevII</a>	13
<a href="#">lir::Elliptic</a>	13
<a href="#">lir::Legendre</a>	14
<a href="#">lir::RBJ</a>	14

## 2 Hierarchical Index

### 2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

<a href="#">lir::RootFinderBase::Array</a>	18
BandPassBase	
<a href="#">lir::PoleFilter&lt; BandPassBase, StateType, MaxOrder, MaxOrder *2 &gt;</a>	71
<a href="#">lir::Bessel::BandPass&lt; MaxOrder, StateType &gt;</a>	21
<a href="#">lir::Butterworth::BandPass&lt; MaxOrder, StateType &gt;</a>	23
<a href="#">lir::ChebyshevI::BandPass&lt; MaxOrder, StateType &gt;</a>	22
<a href="#">lir::ChebyshevII::BandPass&lt; MaxOrder, StateType &gt;</a>	18
<a href="#">lir::Elliptic::BandPass&lt; MaxOrder, StateType &gt;</a>	19
<a href="#">lir::Legendre::BandPass&lt; MaxOrder, StateType &gt;</a>	20
<a href="#">lir::BandPassTransform</a>	28
BandShelfBase	
<a href="#">lir::PoleFilter&lt; BandShelfBase, StateType, MaxOrder, MaxOrder *2 &gt;</a>	71
<a href="#">lir::Butterworth::BandShelf&lt; MaxOrder, StateType &gt;</a>	28
<a href="#">lir::ChebyshevI::BandShelf&lt; MaxOrder, StateType &gt;</a>	30

lir::ChebyshevII::BandShelf< MaxOrder, StateType >	29
BandStopBase	
lir::PoleFilter< BandStopBase, StateType, MaxOrder, MaxOrder *2 >	71
lir::Bessel::BandStop< MaxOrder, StateType >	35
lir::Butterworth::BandStop< MaxOrder, StateType >	37
lir::ChebyshevI::BandStop< MaxOrder, StateType >	34
lir::ChebyshevII::BandStop< MaxOrder, StateType >	32
lir::Elliptic::BandStop< MaxOrder, StateType >	33
lir::Legendre::BandStop< MaxOrder, StateType >	34
lir::BandStopTransform	40
lir::BiquadBase	41
lir::Biquad	41
lir::Cascade::Stage	76
lir::Custom::OnePole	70
lir::Custom::TwoPole	77
lir::RBJ::RBJbase	73
lir::RBJ::AllPass	15
lir::RBJ::BandPass1	24
lir::RBJ::BandPass2	25
lir::RBJ::BandShelf	30
lir::RBJ::BandStop	36
lir::RBJ::HighPass	49
lir::RBJ::HighShelf	55
lir::RBJ::LowPass	61
lir::RBJ::LowShelf	67
lir::Cascade	42
lir::PoleFilterBase2	71
lir::PoleFilterBase< AnalogPrototype >	71
lir::PoleFilterBase< AnalogLowPass >	71
lir::Bessel::BandPassBase	27
lir::Bessel::BandStopBase	38
lir::Bessel::HighPassBase	51

<code>lir::Bessel::LowPassBase</code>	64
<code>lir::Butterworth::BandPassBase</code>	26
<code>lir::Butterworth::BandStopBase</code>	39
<code>lir::Butterworth::HighPassBase</code>	51
<code>lir::Butterworth::LowPassBase</code>	64
<code>lir::ChebyshevI::BandPassBase</code>	26
<code>lir::ChebyshevI::BandStopBase</code>	39
<code>lir::ChebyshevI::HighPassBase</code>	50
<code>lir::ChebyshevI::LowPassBase</code>	63
<code>lir::ChebyshevII::BandPassBase</code>	28
<code>lir::ChebyshevII::BandStopBase</code>	40
<code>lir::ChebyshevII::HighPassBase</code>	52
<code>lir::ChebyshevII::LowPassBase</code>	65
<code>lir::Elliptic::BandPassBase</code>	26
<code>lir::Elliptic::BandStopBase</code>	38
<code>lir::Elliptic::HighPassBase</code>	50
<code>lir::Elliptic::LowPassBase</code>	64
<code>lir::Legendre::BandPassBase</code>	27
<code>lir::Legendre::BandStopBase</code>	39
<code>lir::Legendre::HighPassBase</code>	51
<code>lir::Legendre::LowPassBase</code>	65
<code>lir::PoleFilterBase&lt; AnalogLowShelf &gt;</code>	71
<code>lir::Bessel::LowShelfBase</code>	69
<code>lir::Butterworth::BandShelfBase</code>	31
<code>lir::Butterworth::HighShelfBase</code>	56
<code>lir::Butterworth::LowShelfBase</code>	70
<code>lir::ChebyshevI::BandShelfBase</code>	31
<code>lir::ChebyshevI::HighShelfBase</code>	55
<code>lir::ChebyshevI::LowShelfBase</code>	69
<code>lir::ChebyshevII::BandShelfBase</code>	31
<code>lir::ChebyshevII::HighShelfBase</code>	56
<code>lir::ChebyshevII::LowShelfBase</code>	69

<b>lir::CascadeStages&lt; MaxStages, StateType &gt;</b>	<b>43</b>
<b>lir::CascadeStages&lt;(MaxAnalogPoles+1)/2, StateType &gt;</b>	<b>43</b>
<b>lir::PoleFilter&lt; HighPassBase, StateType, MaxOrder &gt;</b>	<b>71</b>
<b>lir::Bessel::HighPass&lt; MaxOrder, StateType &gt;</b>	<b>46</b>
<b>lir::Butterworth::HighPass&lt; MaxOrder, StateType &gt;</b>	<b>45</b>
<b>lir::ChebyshevI::HighPass&lt; MaxOrder, StateType &gt;</b>	<b>48</b>
<b>lir::ChebyshevII::HighPass&lt; MaxOrder, StateType &gt;</b>	<b>44</b>
<b>lir::Elliptic::HighPass&lt; MaxOrder, StateType &gt;</b>	<b>46</b>
<b>lir::Legendre::HighPass&lt; MaxOrder, StateType &gt;</b>	<b>47</b>
<b>lir::PoleFilter&lt; HighShelfBase, StateType, MaxOrder &gt;</b>	<b>71</b>
<b>lir::Butterworth::HighShelf&lt; MaxOrder, StateType &gt;</b>	<b>53</b>
<b>lir::ChebyshevI::HighShelf&lt; MaxOrder, StateType &gt;</b>	<b>54</b>
<b>lir::ChebyshevII::HighShelf&lt; MaxOrder, StateType &gt;</b>	<b>54</b>
<b>lir::PoleFilter&lt; LowPassBase, StateType, MaxOrder &gt;</b>	<b>71</b>
<b>lir::Bessel::LowPass&lt; MaxOrder, StateType &gt;</b>	<b>59</b>
<b>lir::Butterworth::LowPass&lt; MaxOrder, StateType &gt;</b>	<b>62</b>
<b>lir::ChebyshevI::LowPass&lt; MaxOrder, StateType &gt;</b>	<b>60</b>
<b>lir::ChebyshevII::LowPass&lt; MaxOrder, StateType &gt;</b>	<b>57</b>
<b>lir::Elliptic::LowPass&lt; MaxOrder, StateType &gt;</b>	<b>58</b>
<b>lir::Legendre::LowPass&lt; MaxOrder, StateType &gt;</b>	<b>60</b>
<b>lir::PoleFilter&lt; LowShelfBase, StateType, MaxOrder &gt;</b>	<b>71</b>
<b>lir::Butterworth::LowShelf&lt; MaxOrder, StateType &gt;</b>	<b>68</b>
<b>lir::ChebyshevI::LowShelf&lt; MaxOrder, StateType &gt;</b>	<b>66</b>
<b>lir::ChebyshevII::LowShelf&lt; MaxOrder, StateType &gt;</b>	<b>66</b>
<b>lir::CascadeStages&lt;(MaxDigitalPoles+1)/2, StateType &gt;</b>	<b>43</b>
<b>lir::PoleFilter&lt; BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles &gt;</b>	<b>71</b>
<b>lir::PoleFilter&lt; BandPassBase, StateType, MaxOrder, MaxOrder *2 &gt;</b>	<b>71</b>
<b>lir::PoleFilter&lt; BandShelfBase, StateType, MaxOrder, MaxOrder *2 &gt;</b>	<b>71</b>
<b>lir::PoleFilter&lt; BandStopBase, StateType, MaxOrder, MaxOrder *2 &gt;</b>	<b>71</b>
complex_pair_t	
<b>lir::ComplexPair</b>	<b>43</b>
<b>lir::DirectFormI</b>	<b>43</b>

<b>lir::DirectFormII</b>	<b>43</b>
<b>lir::EnvelopeFollower</b> < Channels, Value > HighPassBase	<b>44</b>
<b>lir::PoleFilter</b> < HighPassBase, StateType, MaxOrder >	<b>71</b>
<b>lir::HighPassTransform</b> HighShelfBase	<b>52</b>
<b>lir::PoleFilter</b> < HighShelfBase, StateType, MaxOrder >	<b>71</b>
<b>lir::Layout</b> < MaxPoles >	<b>56</b>
<b>lir::Layout</b> < MaxAnalogPoles >	<b>56</b>
<b>lir::Layout</b> < MaxDigitalPoles >	<b>56</b>
<b>lir::LayoutBase</b>	<b>57</b>
<b>lir::Bessel::AnalogLowPass</b>	<b>16</b>
<b>lir::Bessel::AnalogLowShelf</b>	<b>17</b>
<b>lir::Butterworth::AnalogLowPass</b>	<b>15</b>
<b>lir::Butterworth::AnalogLowShelf</b>	<b>17</b>
<b>lir::ChebyshevI::AnalogLowPass</b>	<b>15</b>
<b>lir::ChebyshevI::AnalogLowShelf</b>	<b>18</b>
<b>lir::ChebyshevII::AnalogLowPass</b>	<b>17</b>
<b>lir::ChebyshevII::AnalogLowShelf</b>	<b>18</b>
<b>lir::Elliptic::AnalogLowPass</b>	<b>16</b>
<b>lir::Legendre::AnalogLowPass</b>	<b>16</b>
LowPassBase	
<b>lir::PoleFilter</b> < LowPassBase, StateType, MaxOrder >	<b>71</b>
<b>lir::LowPassTransform</b> LowShelfBase	<b>66</b>
<b>lir::PoleFilter</b> < LowShelfBase, StateType, MaxOrder >	<b>71</b>
<b>lir::PoleZeroPair</b>	<b>72</b>
<b>lir::BiquadPoleState</b>	<b>42</b>
<b>lir::Legendre::PolynomialFinderBase</b>	<b>73</b>
<b>lir::Legendre::PolynomialFinder</b> < maxN >	<b>73</b>
<b>lir::Legendre::PolynomialFinder</b> < MaxOrder >	<b>73</b>
<b>lir::RootFinderBase</b>	<b>75</b>
<b>lir::RootFinder</b> < maxdegree >	<b>75</b>
<b>lir::RootFinder</b> < MaxOrder *2 >	<b>75</b>

<a href="#">lir::RootFinder&lt; MaxOrder &gt;</a>	<a href="#">75</a>
<a href="#">lir::SlopeDetector&lt; Channels, Value &gt;</a>	<a href="#">75</a>
<a href="#">lir::Elliptic::Solver</a>	<a href="#">75</a>
<a href="#">StateType</a>	
<a href="#">lir::BiquadBase::State&lt; StateType &gt;</a>	<a href="#">76</a>
<a href="#">lir::Cascade::Storage</a>	<a href="#">76</a>
<a href="#">lir::TransposedDirectFormI</a>	<a href="#">76</a>
<a href="#">lir::TransposedDirectFormII</a>	<a href="#">77</a>
<a href="#">lir::Bessel::WorkspaceBase</a>	<a href="#">78</a>
<a href="#">lir::Bessel::Workspace&lt; MaxOrder &gt;</a>	<a href="#">77</a>
<a href="#">lir::Legendre::WorkspaceBase</a>	<a href="#">78</a>
<a href="#">lir::Legendre::Workspace&lt; MaxOrder &gt;</a>	<a href="#">77</a>
<a href="#">BaseClass</a>	
<a href="#">lir::PoleFilter&lt; BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles &gt;</a>	<a href="#">71</a>

## 3 Class Index

### 3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">lir::RBJ::AllPass</a>	<a href="#">15</a>
<a href="#">lir::Butterworth::AnalogLowPass</a>	<a href="#">15</a>
<a href="#">lir::ChebyshevI::AnalogLowPass</a>	<a href="#">15</a>
<a href="#">lir::Elliptic::AnalogLowPass</a>	<a href="#">16</a>
<a href="#">lir::Legendre::AnalogLowPass</a>	<a href="#">16</a>
<a href="#">lir::Bessel::AnalogLowPass</a>	<a href="#">16</a>
<a href="#">lir::ChebyshevII::AnalogLowPass</a>	<a href="#">17</a>
<a href="#">lir::Bessel::AnalogLowShelf</a>	<a href="#">17</a>
<a href="#">lir::Butterworth::AnalogLowShelf</a>	<a href="#">17</a>
<a href="#">lir::ChebyshevI::AnalogLowShelf</a>	<a href="#">18</a>
<a href="#">lir::ChebyshevII::AnalogLowShelf</a>	<a href="#">18</a>
<a href="#">lir::RootFinderBase::Array</a>	<a href="#">18</a>
<a href="#">lir::ChebyshevII::BandPass&lt; MaxOrder, StateType &gt;</a>	<a href="#">18</a>
<a href="#">lir::Elliptic::BandPass&lt; MaxOrder, StateType &gt;</a>	<a href="#">19</a>

<a href="#">lir::Legendre::BandPass&lt; MaxOrder, StateType &gt;</a>	20
<a href="#">lir::Bessel::BandPass&lt; MaxOrder, StateType &gt;</a>	21
<a href="#">lir::ChebyshevI::BandPass&lt; MaxOrder, StateType &gt;</a>	22
<a href="#">lir::Butterworth::BandPass&lt; MaxOrder, StateType &gt;</a>	23
<a href="#">lir::RBJ::BandPass1</a>	24
<a href="#">lir::RBJ::BandPass2</a>	25
<a href="#">lir::Elliptic::BandPassBase</a>	26
<a href="#">lir::Butterworth::BandPassBase</a>	26
<a href="#">lir::ChebyshevI::BandPassBase</a>	26
<a href="#">lir::Legendre::BandPassBase</a>	27
<a href="#">lir::Bessel::BandPassBase</a>	27
<a href="#">lir::ChebyshevII::BandPassBase</a>	28
<a href="#">lir::BandPassTransform</a>	28
<a href="#">lir::Butterworth::BandShelf&lt; MaxOrder, StateType &gt;</a>	28
<a href="#">lir::ChebyshevII::BandShelf&lt; MaxOrder, StateType &gt;</a>	29
<a href="#">lir::ChebyshevI::BandShelf&lt; MaxOrder, StateType &gt;</a>	30
<a href="#">lir::RBJ::BandShelf</a>	30
<a href="#">lir::ChebyshevI::BandShelfBase</a>	31
<a href="#">lir::Butterworth::BandShelfBase</a>	31
<a href="#">lir::ChebyshevII::BandShelfBase</a>	31
<a href="#">lir::ChebyshevII::BandStop&lt; MaxOrder, StateType &gt;</a>	32
<a href="#">lir::Elliptic::BandStop&lt; MaxOrder, StateType &gt;</a>	33
<a href="#">lir::Legendre::BandStop&lt; MaxOrder, StateType &gt;</a>	34
<a href="#">lir::ChebyshevI::BandStop&lt; MaxOrder, StateType &gt;</a>	34
<a href="#">lir::Bessel::BandStop&lt; MaxOrder, StateType &gt;</a>	35
<a href="#">lir::RBJ::BandStop</a>	36
<a href="#">lir::Butterworth::BandStop&lt; MaxOrder, StateType &gt;</a>	37
<a href="#">lir::Bessel::BandStopBase</a>	38
<a href="#">lir::Elliptic::BandStopBase</a>	38
<a href="#">lir::ChebyshevI::BandStopBase</a>	39
<a href="#">lir::Legendre::BandStopBase</a>	39
<a href="#">lir::Butterworth::BandStopBase</a>	39

<a href="#">lir::ChebyshevII::BandStopBase</a>	40
<a href="#">lir::BandStopTransform</a>	40
<a href="#">lir::Biquad</a>	41
<a href="#">lir::BiquadBase</a>	41
<a href="#">lir::BiquadPoleState</a>	42
<a href="#">lir::Cascade</a>	42
<a href="#">lir::CascadeStages&lt; MaxStages, StateType &gt;</a>	43
<a href="#">lir::ComplexPair</a>	43
<a href="#">lir::DirectFormI</a>	43
<a href="#">lir::DirectFormII</a>	43
<a href="#">lir::EnvelopeFollower&lt; Channels, Value &gt;</a>	44
<a href="#">lir::ChebyshevII::HighPass&lt; MaxOrder, StateType &gt;</a>	44
<a href="#">lir::Butterworth::HighPass&lt; MaxOrder, StateType &gt;</a>	45
<a href="#">lir::Elliptic::HighPass&lt; MaxOrder, StateType &gt;</a>	46
<a href="#">lir::Bessel::HighPass&lt; MaxOrder, StateType &gt;</a>	46
<a href="#">lir::Legendre::HighPass&lt; MaxOrder, StateType &gt;</a>	47
<a href="#">lir::ChebyshevI::HighPass&lt; MaxOrder, StateType &gt;</a>	48
<a href="#">lir::RBJ::HighPass</a>	49
<a href="#">lir::Elliptic::HighPassBase</a>	50
<a href="#">lir::ChebyshevI::HighPassBase</a>	50
<a href="#">lir::Butterworth::HighPassBase</a>	51
<a href="#">lir::Legendre::HighPassBase</a>	51
<a href="#">lir::Bessel::HighPassBase</a>	51
<a href="#">lir::ChebyshevII::HighPassBase</a>	52
<a href="#">lir::HighPassTransform</a>	52
<a href="#">lir::Butterworth::HighShelf&lt; MaxOrder, StateType &gt;</a>	53
<a href="#">lir::ChebyshevII::HighShelf&lt; MaxOrder, StateType &gt;</a>	54
<a href="#">lir::ChebyshevI::HighShelf&lt; MaxOrder, StateType &gt;</a>	54
<a href="#">lir::RBJ::HighShelf</a>	55
<a href="#">lir::ChebyshevI::HighShelfBase</a>	55
<a href="#">lir::Butterworth::HighShelfBase</a>	56
<a href="#">lir::ChebyshevII::HighShelfBase</a>	56



<a href="#">lir::Layout&lt; MaxPoles &gt;</a>	56
<a href="#">lir::LayoutBase</a>	57
<a href="#">lir::ChebyshevII::LowPass&lt; MaxOrder, StateType &gt;</a>	57
<a href="#">lir::Elliptic::LowPass&lt; MaxOrder, StateType &gt;</a>	58
<a href="#">lir::Bessel::LowPass&lt; MaxOrder, StateType &gt;</a>	59
<a href="#">lir::Legendre::LowPass&lt; MaxOrder, StateType &gt;</a>	60
<a href="#">lir::ChebyshevI::LowPass&lt; MaxOrder, StateType &gt;</a>	60
<a href="#">lir::RBJ::LowPass</a>	61
<a href="#">lir::Butterworth::LowPass&lt; MaxOrder, StateType &gt;</a>	62
<a href="#">lir::ChebyshevI::LowPassBase</a>	63
<a href="#">lir::Elliptic::LowPassBase</a>	64
<a href="#">lir::Bessel::LowPassBase</a>	64
<a href="#">lir::Butterworth::LowPassBase</a>	64
<a href="#">lir::Legendre::LowPassBase</a>	65
<a href="#">lir::ChebyshevII::LowPassBase</a>	65
<a href="#">lir::LowPassTransform</a>	66
<a href="#">lir::ChebyshevII::LowShelf&lt; MaxOrder, StateType &gt;</a>	66
<a href="#">lir::ChebyshevI::LowShelf&lt; MaxOrder, StateType &gt;</a>	66
<a href="#">lir::RBJ::LowShelf</a>	67
<a href="#">lir::Butterworth::LowShelf&lt; MaxOrder, StateType &gt;</a>	68
<a href="#">lir::ChebyshevII::LowShelfBase</a>	69
<a href="#">lir::Bessel::LowShelfBase</a>	69
<a href="#">lir::ChebyshevI::LowShelfBase</a>	69
<a href="#">lir::Butterworth::LowShelfBase</a>	70
<a href="#">lir::Custom::OnePole</a>	70
<a href="#">lir::PoleFilter&lt; BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles &gt;</a>	71
<a href="#">lir::PoleFilterBase&lt; AnalogPrototype &gt;</a>	71
<a href="#">lir::PoleFilterBase2</a>	71
<a href="#">lir::PoleZeroPair</a>	72
<a href="#">lir::Legendre::PolynomialFinder&lt; maxN &gt;</a>	73
<a href="#">lir::Legendre::PolynomialFinderBase</a>	73

<a href="#">lir::RBJ::RBJbase</a>	
The base class of all <a href="#">RBJ</a> filters	73
<a href="#">lir::RootFinder&lt; maxdegree &gt;</a>	75
<a href="#">lir::RootFinderBase</a>	75
<a href="#">lir::SlopeDetector&lt; Channels, Value &gt;</a>	75
<a href="#">lir::Elliptic::Solver</a>	75
<a href="#">lir::Cascade::Stage</a>	76
<a href="#">lir::BiquadBase::State&lt; StateType &gt;</a>	76
<a href="#">lir::Cascade::Storage</a>	76
<a href="#">lir::TransposedDirectFormI</a>	76
<a href="#">lir::TransposedDirectFormII</a>	77
<a href="#">lir::Custom::TwoPole</a>	77
<a href="#">lir::Bessel::Workspace&lt; MaxOrder &gt;</a>	77
<a href="#">lir::Legendre::Workspace&lt; MaxOrder &gt;</a>	77
<a href="#">lir::Bessel::WorkspaceBase</a>	78
<a href="#">lir::Legendre::WorkspaceBase</a>	78

## 4 Namespace Documentation

### 4.1 lir::Bessel Namespace Reference

#### Classes

- class [AnalogLowPass](#)
- class [AnalogLowShelf](#)
- struct [BandPass](#)
- struct [BandPassBase](#)
- struct [BandStop](#)
- struct [BandStopBase](#)
- struct [HighPass](#)
- struct [HighPassBase](#)
- struct [LowPass](#)
- struct [LowPassBase](#)
- struct [LowShelfBase](#)
- struct [Workspace](#)
- struct [WorkspaceBase](#)

#### 4.1.1 Detailed Description

Filters with [Bessel](#) response characteristics

## 4.2 `lir::Butterworth` Namespace Reference

### Classes

- class [AnalogLowPass](#)
- class [AnalogLowShelf](#)
- struct [BandPass](#)
- struct [BandPassBase](#)
- struct [BandShelf](#)
- struct [BandShelfBase](#)
- struct [BandStop](#)
- struct [BandStopBase](#)
- struct [HighPass](#)
- struct [HighPassBase](#)
- struct [HighShelf](#)
- struct [HighShelfBase](#)
- struct [LowPass](#)
- struct [LowPassBase](#)
- struct [LowShelf](#)
- struct [LowShelfBase](#)

### 4.2.1 Detailed Description

Filters with [Butterworth](#) response characteristics

## 4.3 `lir::ChebyshevI` Namespace Reference

### Classes

- class [AnalogLowPass](#)
- class [AnalogLowShelf](#)
- struct [BandPass](#)
- struct [BandPassBase](#)
- struct [BandShelf](#)
- struct [BandShelfBase](#)
- struct [BandStop](#)
- struct [BandStopBase](#)
- struct [HighPass](#)
- struct [HighPassBase](#)
- struct [HighShelf](#)
- struct [HighShelfBase](#)
- struct [LowPass](#)
- struct [LowPassBase](#)
- struct [LowShelf](#)
- struct [LowShelfBase](#)

### 4.3.1 Detailed Description

Filters with Chebyshev response characteristics. The last parameter "passbandRippleInDecibel" defines the pass-band ripple in decibel.

## 4.4 `lir::ChebyshevII` Namespace Reference

### Classes

- class [AnalogLowPass](#)
- class [AnalogLowShelf](#)
- struct [BandPass](#)
- struct [BandPassBase](#)
- struct [BandShelf](#)
- struct [BandShelfBase](#)
- struct [BandStop](#)
- struct [BandStopBase](#)
- struct [HighPass](#)
- struct [HighPassBase](#)
- struct [HighShelf](#)
- struct [HighShelfBase](#)
- struct [LowPass](#)
- struct [LowPassBase](#)
- struct [LowShelf](#)
- struct [LowShelfBase](#)

#### 4.4.1 Detailed Description

Filters with [ChebyshevII](#) response characteristics. The last parameter "minimumStopBandRejectionInDB" defines the minimal stopband rejection requested. Generally there will be frequencies where the rejection is much better but this parameter guarantees that the rejection is at least "minimumStopBandRejectionInDB".

## 4.5 `lir::Elliptic` Namespace Reference

### Classes

- class [AnalogLowPass](#)
- struct [BandPass](#)
- struct [BandPassBase](#)
- struct [BandStop](#)
- struct [BandStopBase](#)
- struct [HighPass](#)
- struct [HighPassBase](#)
- struct [LowPass](#)
- struct [LowPassBase](#)
- class [Solver](#)

#### 4.5.1 Detailed Description

Filters with [Elliptic](#) response characteristics

## 4.6 lir::Legendre Namespace Reference

### Classes

- class [AnalogLowPass](#)
- struct [BandPass](#)
- struct [BandPassBase](#)
- struct [BandStop](#)
- struct [BandStopBase](#)
- struct [HighPass](#)
- struct [HighPassBase](#)
- struct [LowPass](#)
- struct [LowPassBase](#)
- class [PolynomialFinder](#)
- class [PolynomialFinderBase](#)
- struct [Workspace](#)
- struct [WorkspaceBase](#)

### 4.6.1 Detailed Description

Filters with [Legendre](#) / "Optimum-L" response characteristics

## 4.7 lir::RBJ Namespace Reference

### Classes

- struct [AllPass](#)
- struct [BandPass1](#)
- struct [BandPass2](#)
- struct [BandShelf](#)
- struct [BandStop](#)
- struct [HighPass](#)
- struct [HighShelf](#)
- struct [LowPass](#)
- struct [LowShelf](#)
- struct [RBJbase](#)

*The base class of all [RBJ](#) filters.*

### 4.7.1 Detailed Description

Filter realizations based on Robert Bristol-Johnson formulae:

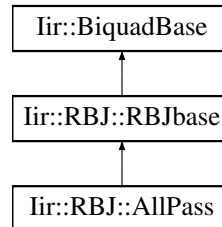
<http://www.musicdsp.org/files/Audio-EQ-Cookbook.txt>

These are all 2nd order filters which are tuned with the Q (or Quality factor). The Q factor causes a resonance at the cutoff frequency. The higher the Q factor the higher the resonance. If  $0.5 < Q < 1/\sqrt{2}$  then there is no resonance peak. Above  $1/\sqrt{2}$  the peak becomes more and more pronounced. For bandpass and stopband the Q factor is replaced by the width of the filter. The higher Q the more narrow the bandwidth of the notch or bandpass.

## 5 Class Documentation

### 5.1 Iir::RBJ::AllPass Struct Reference

Inheritance diagram for Iir::RBJ::AllPass:



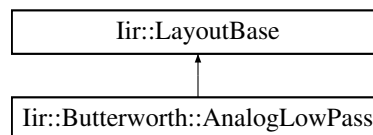
#### Additional Inherited Members

The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

### 5.2 Iir::Butterworth::AnalogLowPass Class Reference

Inheritance diagram for Iir::Butterworth::AnalogLowPass:

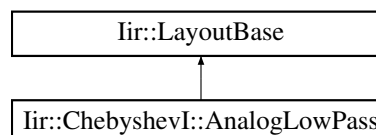


The documentation for this class was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

### 5.3 Iir::ChebyshevI::AnalogLowPass Class Reference

Inheritance diagram for Iir::ChebyshevI::AnalogLowPass:

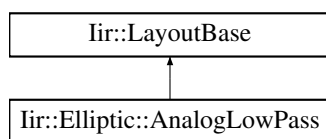


The documentation for this class was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

## 5.4 Iir::Elliptic::AnalogLowPass Class Reference

Inheritance diagram for Iir::Elliptic::AnalogLowPass:

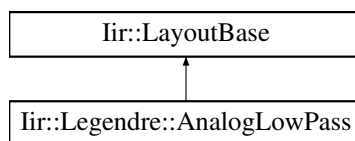


The documentation for this class was generated from the following files:

- iir/Elliptic.h
- iir/Elliptic.cpp

## 5.5 Iir::Legendre::AnalogLowPass Class Reference

Inheritance diagram for Iir::Legendre::AnalogLowPass:

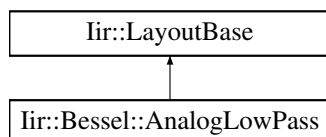


The documentation for this class was generated from the following files:

- iir/Legendre.h
- iir/Legendre.cpp

## 5.6 Iir::Bessel::AnalogLowPass Class Reference

Inheritance diagram for Iir::Bessel::AnalogLowPass:

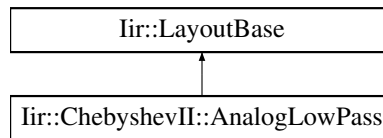


The documentation for this class was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

## 5.7 Iir::ChebyshevII::AnalogLowPass Class Reference

Inheritance diagram for Iir::ChebyshevII::AnalogLowPass:

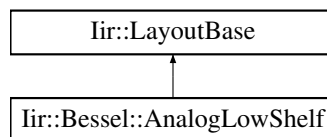


The documentation for this class was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

## 5.8 Iir::Bessel::AnalogLowShelf Class Reference

Inheritance diagram for Iir::Bessel::AnalogLowShelf:

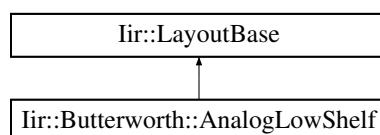


The documentation for this class was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

## 5.9 Iir::Butterworth::AnalogLowShelf Class Reference

Inheritance diagram for Iir::Butterworth::AnalogLowShelf:



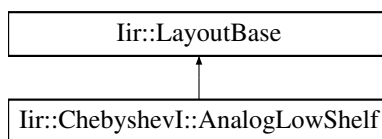
The documentation for this class was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp



### 5.10 Iir::ChebyshevI::AnalogLowShelf Class Reference

Inheritance diagram for Iir::ChebyshevI::AnalogLowShelf:

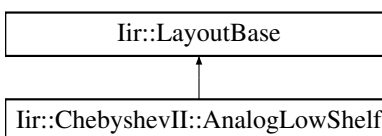


The documentation for this class was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

### 5.11 Iir::ChebyshevII::AnalogLowShelf Class Reference

Inheritance diagram for Iir::ChebyshevII::AnalogLowShelf:



The documentation for this class was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

### 5.12 Iir::RootFinderBase::Array Struct Reference

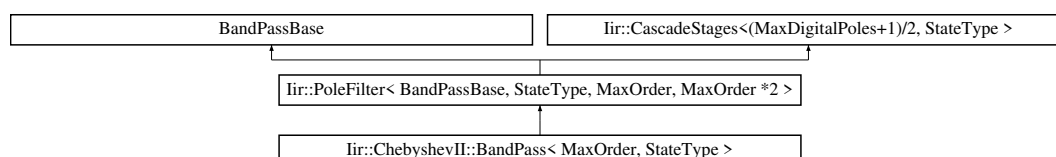
The documentation for this struct was generated from the following file:

- iir/RootFinder.h

### 5.13 Iir::ChebyshevII::BandPass< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for Iir::ChebyshevII::BandPass< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency, double stopBandDb)

## 5.13.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::BandPass< MaxOrder, StateType >
```

[ChebyshevII](#) bandpass filter

## 5.13.2 Member Function Documentation

## 5.13.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevII::BandPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double stopBandDb ) [inline]
```

Calculates the coefficients of the filter

## Parameters

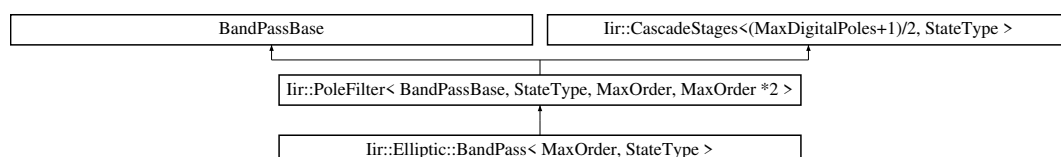
<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass
<i>widthFrequency</i>	Width of the bandpass
<i>stopBandDb</i>	Permitted ripples in dB in the stopband

The documentation for this struct was generated from the following file:

- [iir/ChebyshevII.h](#)

## 5.14 Iir::Elliptic::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference

Inheritance diagram for Iir::Elliptic::BandPass< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency, double rippleDb, double rolloff)

### 5.14.1 Member Function Documentation

#### 5.14.1.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Elliptic::BandPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double rippleDb,
    double rolloff ) [inline]
```

Calculates the coefficients of the filter

#### Parameters

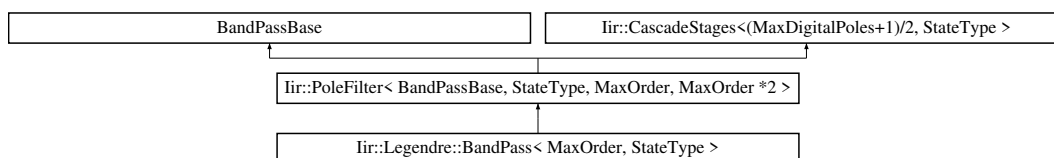
<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Centre frequency of the bandpass
<i>widthFrequency</i>	Frequency width of the bandpass
<i>rippleDb</i>	Permitted ripples in dB in the passband
<i>rolloff</i>	Rolloff from the pass- to stopband

The documentation for this struct was generated from the following file:

- iir/Elliptic.h

## 5.15 Iir::Legendre::BandPass< MaxOrder, StateType > Struct Template Reference

Inheritance diagram for Iir::Legendre::BandPass< MaxOrder, StateType >:



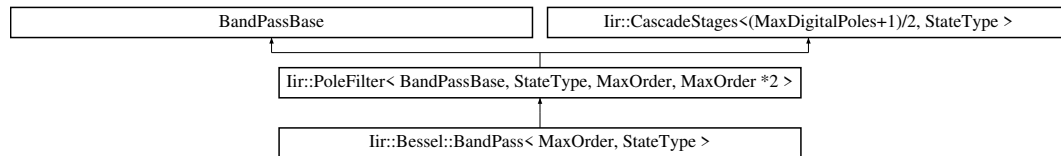
The documentation for this struct was generated from the following file:

- iir/Legendre.h

5.16 `lir::Bessel::BandPass< MaxOrder, StateType >` Struct Template Reference

```
#include <Bessel.h>
```

Inheritance diagram for `lir::Bessel::BandPass< MaxOrder, StateType >`:



## Public Member Functions

- void `setup` (double `sampleRate`, double `centerFrequency`, double `widthFrequency`)

## 5.16.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct lir::Bessel::BandPass< MaxOrder, StateType >
```

[Bessel](#) bandpass.

## 5.16.2 Member Function Documentation

5.16.2.1 `setup()`

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void lir::Bessel::BandPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency ) [inline]
```

Calculate the coefficients

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass in Hz
<i>widthFrequency</i>	Width of the bandpass in Hz

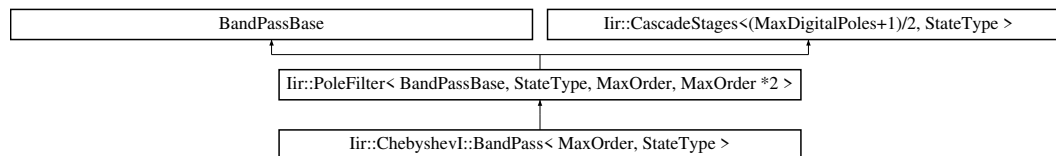
The documentation for this struct was generated from the following file:

- `iir/Bessel.h`

## 5.17 Iir::ChebyshevI::BandPass< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for Iir::ChebyshevI::BandPass< MaxOrder, StateType >:



### Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency, double rippleDb)

#### 5.17.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::BandPass< MaxOrder, StateType >
```

[ChebyshevI](#) bandpass filter

#### 5.17.2 Member Function Documentation

##### 5.17.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevI::BandPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double rippleDb ) [inline]
```

Calculates the coefficients of the filter

#### Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass
<i>widthFrequency</i>	Frequency with of the passband
<i>rippleDb</i>	Permitted ripples in dB in the passband

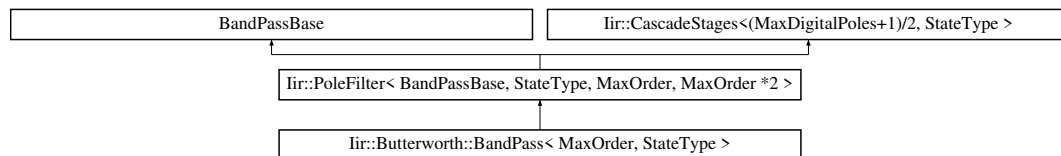
The documentation for this struct was generated from the following file:

- `iir/ChebyshevI.h`

## 5.18 Iir::Butterworth::BandPass&lt; MaxOrder, StateType &gt; Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for Iir::Butterworth::BandPass< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency)

## 5.18.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Butterworth::BandPass< MaxOrder, StateType >
```

[Butterworth](#) Bandpass filter.

## 5.18.2 Member Function Documentation

## 5.18.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Butterworth::BandPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency ) [inline]
```

Calculates the coefficients

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Centre frequency of the bandpass
<i>widthFrequency</i>	Width of the bandpass

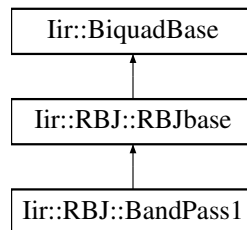
The documentation for this struct was generated from the following file:

- iir/Butterworth.h

## 5.19 Iir::RBJ::BandPass1 Struct Reference

```
#include <RBJ.h>
```

Inheritance diagram for Iir::RBJ::BandPass1:



### Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double bandWidth)

### 5.19.1 Detailed Description

Bandpass with constant skirt gain

### 5.19.2 Member Function Documentation

#### 5.19.2.1 setup()

```
void Iir::RBJ::BandPass1::setup (
    double sampleRate,
    double centerFrequency,
    double bandWidth )
```

Calculates the coefficients

#### Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass
<i>bandWidth</i>	Bandwidth of the bandpass

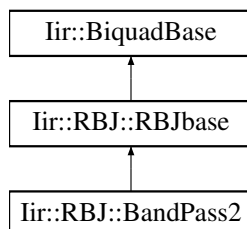
The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

## 5.20 Iir::RBJ::BandPass2 Struct Reference

```
#include <RBJ.h>
```

Inheritance diagram for Iir::RBJ::BandPass2:



### Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double bandWidth)

### 5.20.1 Detailed Description

Bandpass with constant 0 dB peak gain

### 5.20.2 Member Function Documentation

#### 5.20.2.1 setup()

```
void Iir::RBJ::BandPass2::setup (
    double sampleRate,
    double centerFrequency,
    double bandWidth )
```

Calculates the coefficients

#### Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass
<i>bandWidth</i>	Bandwidth of the bandpass

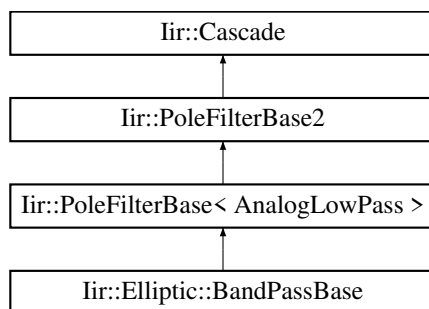
The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp



### 5.21 Iir::Elliptic::BandPassBase Struct Reference

Inheritance diagram for Iir::Elliptic::BandPassBase:

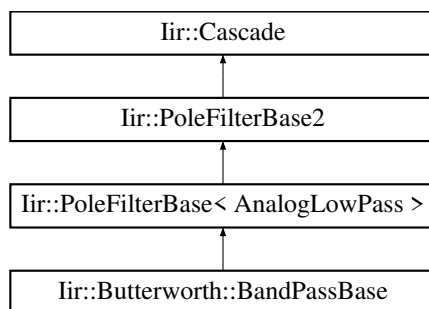


The documentation for this struct was generated from the following files:

- iir/Elliptic.h
- iir/Elliptic.cpp

### 5.22 Iir::Butterworth::BandPassBase Struct Reference

Inheritance diagram for Iir::Butterworth::BandPassBase:

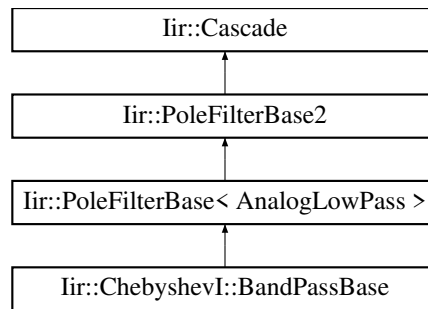


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

### 5.23 Iir::ChebyshevI::BandPassBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::BandPassBase:

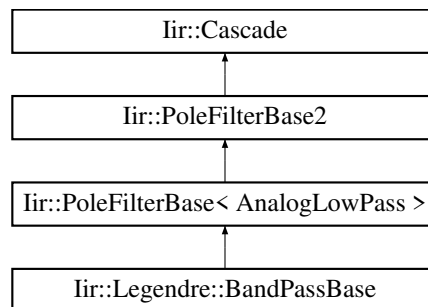


The documentation for this struct was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

## 5.24 Iir::Legendre::BandPassBase Struct Reference

Inheritance diagram for Iir::Legendre::BandPassBase:

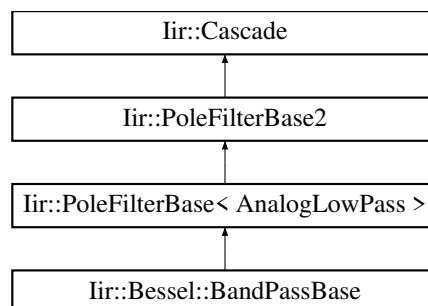


The documentation for this struct was generated from the following files:

- iir/Legendre.h
- iir/Legendre.cpp

## 5.25 Iir::Bessel::BandPassBase Struct Reference

Inheritance diagram for Iir::Bessel::BandPassBase:

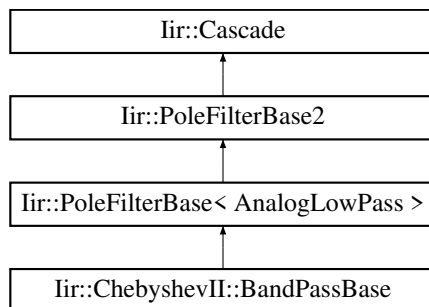


The documentation for this struct was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

## 5.26 Iir::ChebyshevII::BandPassBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::BandPassBase:



The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

## 5.27 Iir::BandPassTransform Class Reference

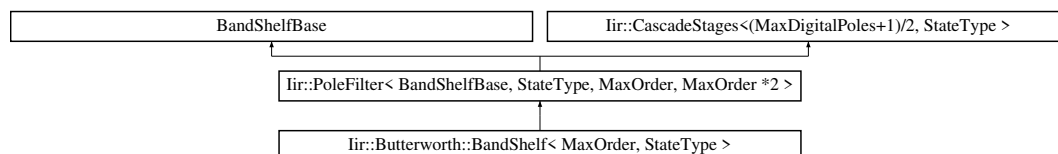
The documentation for this class was generated from the following files:

- iir/PoleFilter.h
- iir/PoleFilter.cpp

## 5.28 Iir::Butterworth::BandShelf< MaxOrder, StateType > Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for Iir::Butterworth::BandShelf< MaxOrder, StateType >:



### Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency, double gainDb)

### 5.28.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Butterworth::BandShelf< MaxOrder, StateType >
```

[Butterworth](#) Bandshelf filter.

## 5.28.2 Member Function Documentation

## 5.28.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Butterworth::BandShelf< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double gainDb ) [inline]
```

Calculates the coefficients

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Centre frequency of the bandstop
<i>widthFrequency</i>	Width of the bandstop
<i>gainDb</i>	The gain in the passband

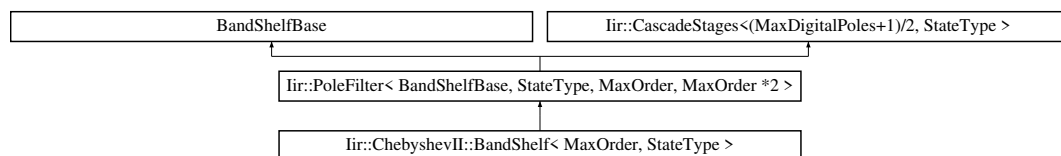
The documentation for this struct was generated from the following file:

- iir/Butterworth.h

## 5.29 Iir::ChebyshevII::BandShelf&lt; MaxOrder, StateType &gt; Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for Iir::ChebyshevII::BandShelf< MaxOrder, StateType >:



## 5.29.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::BandShelf< MaxOrder, StateType >
```

[ChebyshevII](#) bandshelf filter. Init with "setup ( double *sampleRate*, double *centerFrequency*, double *widthFrequency*, double *gainDb*, double *minimumStopBandRejectionInDB*);

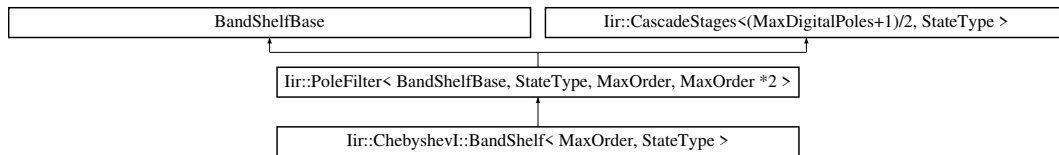
The documentation for this struct was generated from the following file:

- iir/ChebyshevII.h

### 5.30 Iir::ChebyshevI::BandShelf< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for Iir::ChebyshevI::BandShelf< MaxOrder, StateType >:



#### 5.30.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::BandShelf< MaxOrder, StateType >
```

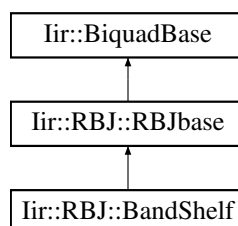
[ChebyshevI](#) bandshelf filter

The documentation for this struct was generated from the following file:

- `iir/ChebyshevI.h`

### 5.31 Iir::RBJ::BandShelf Struct Reference

Inheritance diagram for Iir::RBJ::BandShelf:



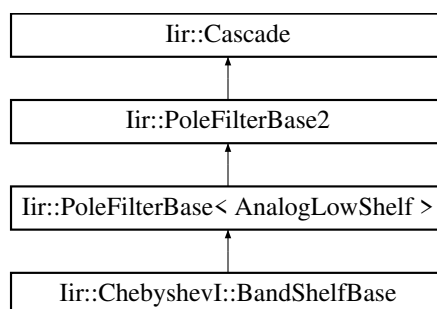
#### Additional Inherited Members

The documentation for this struct was generated from the following files:

- `iir/RBJ.h`
- `iir/RBJ.cpp`

## 5.32 Iir::ChebyshevI::BandShelfBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::BandShelfBase:

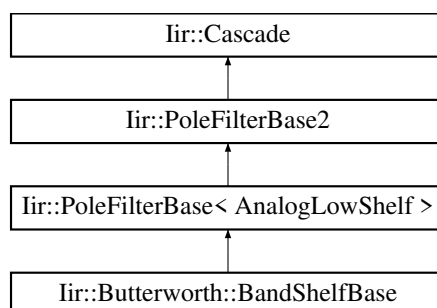


The documentation for this struct was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

## 5.33 Iir::Butterworth::BandShelfBase Struct Reference

Inheritance diagram for Iir::Butterworth::BandShelfBase:

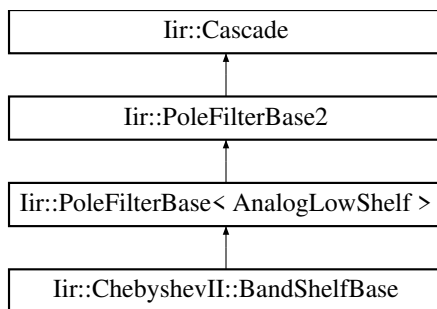


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

## 5.34 Iir::ChebyshevII::BandShelfBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::BandShelfBase:



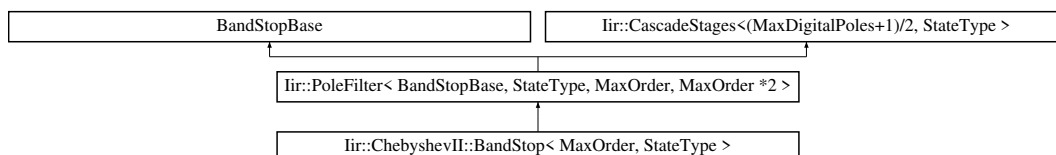
The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

### 5.35 Iir::ChebyshevII::BandStop< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for Iir::ChebyshevII::BandStop< MaxOrder, StateType >:



#### Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency, double stopBandDb)

#### 5.35.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::BandStop< MaxOrder, StateType >
```

[ChebyshevII](#) bandstop filter. Init with "setup ( double sampleRate, double centerFrequency, double widthFrequency, double minimumStopBandRejectionInDB);"

#### 5.35.2 Member Function Documentation

##### 5.35.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevII::BandStop< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double stopBandDb ) [inline]
```

Calculates the coefficients of the filter

## Parameters

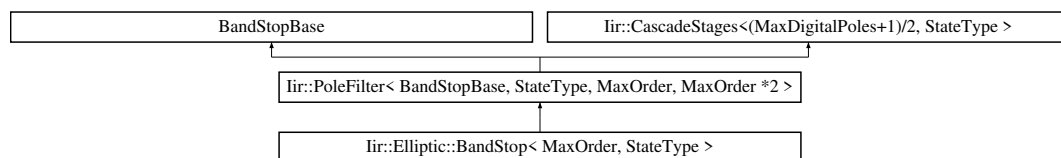
<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandstop
<i>widthFrequency</i>	Width of the bandstop
<i>stopBandDb</i>	Permitted ripples in dB in the stopband

The documentation for this struct was generated from the following file:

- iir/ChebyshevII.h

## 5.36 Iir::Elliptic::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference

Inheritance diagram for Iir::Elliptic::BandStop< MaxOrder, StateType >:



## Public Member Functions

- void `setup` (double `sampleRate`, double `centerFrequency`, double `widthFrequency`, double `rippleDb`, double `rolloff`)

## 5.36.1 Member Function Documentation

## 5.36.1.1 setup()

```

template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Elliptic::BandStop< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double rippleDb,
    double rolloff ) [inline]

```

Calculates the coefficients of the filter

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Centre frequency of the bandstop
<i>widthFrequency</i>	Frequency width of the bandstop
<i>rippleDb</i>	Permitted ripples in dB in the passband
<i>rolloff</i>	Rolloff from the pass- to stopband

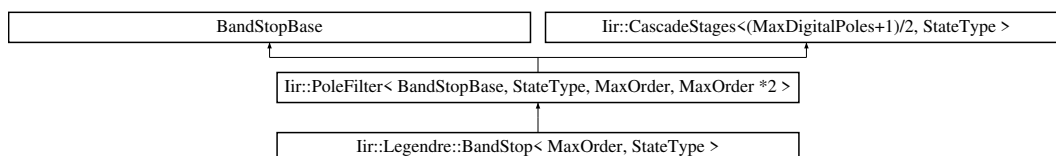


The documentation for this struct was generated from the following file:

- iir/Elliptic.h

### 5.37 Iir::Legendre::BandStop< MaxOrder, StateType > Struct Template Reference

Inheritance diagram for Iir::Legendre::BandStop< MaxOrder, StateType >:



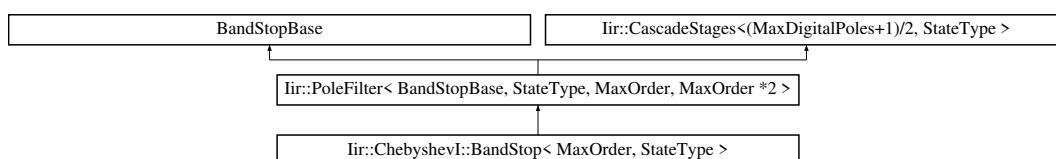
The documentation for this struct was generated from the following file:

- iir/Legendre.h

### 5.38 Iir::ChebyshevI::BandStop< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for Iir::ChebyshevI::BandStop< MaxOrder, StateType >:



#### Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency, double rippleDb)

#### 5.38.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::BandStop< MaxOrder, StateType >
```

[ChebyshevI](#) bandstop filter

#### 5.38.2 Member Function Documentation

##### 5.38.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevI::BandStop< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency,
    double rippleDb ) [inline]
```

Calculates the coefficients of the filter

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the notch
<i>widthFrequency</i>	Frequency with of the notch
<i>rippleDb</i>	Permitted ripples in dB in the passband

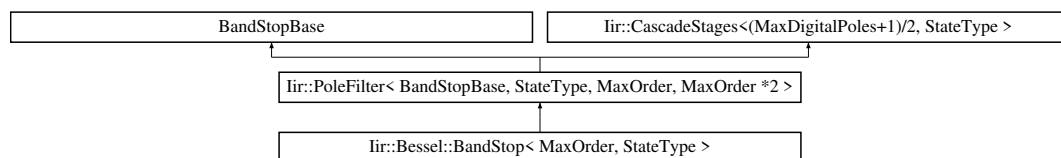
The documentation for this struct was generated from the following file:

- iir/ChebyshevI.h

## 5.39 Iir::Bessel::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference

```
#include <Bessel.h>
```

Inheritance diagram for Iir::Bessel::BandStop< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency)

## 5.39.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Bessel::BandStop< MaxOrder, StateType >
```

[Bessel](#) bandstop.

## 5.39.2 Member Function Documentation

## 5.39.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Bessel::BandStop< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency ) [inline]
```

Calculate the coefficients

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass in Hz
<i>widthFrequency</i>	Width of the bandpass in Hz

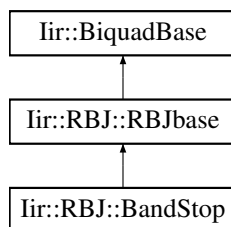
The documentation for this struct was generated from the following file:

- iir/Bessel.h

## 5.40 Iir::RBJ::BandStop Struct Reference

```
#include <RBJ.h>
```

Inheritance diagram for Iir::RBJ::BandStop:



## Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double bandWidth)

### 5.40.1 Detailed Description

Bandstop

### 5.40.2 Member Function Documentation

#### 5.40.2.1 setup()

```
void Iir::RBJ::BandStop::setup (
    double sampleRate,
    double centerFrequency,
    double bandWidth )
```

Calculates the coefficients

## Parameters

<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Center frequency of the bandpass
<i>bandWidth</i>	Bandwidth of the bandpass

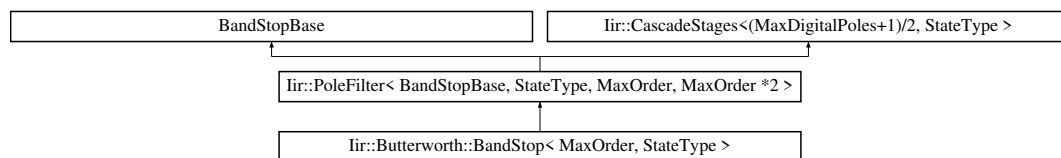
The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

## 5.41 Iir::Butterworth::BandStop&lt; MaxOrder, StateType &gt; Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for Iir::Butterworth::BandStop< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double centerFrequency, double widthFrequency)

## 5.41.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Butterworth::BandStop< MaxOrder, StateType >
```

[Butterworth](#) Bandstop filter.

## 5.41.2 Member Function Documentation

## 5.41.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Butterworth::BandStop< MaxOrder, StateType >::setup (
    double sampleRate,
    double centerFrequency,
    double widthFrequency ) [inline]
```

Calculates the coefficients

## Parameters

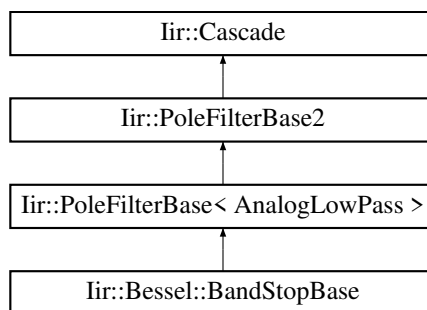
<i>sampleRate</i>	Sampling rate
<i>centerFrequency</i>	Centre frequency of the bandstop
<i>widthFrequency</i>	Width of the bandstop

The documentation for this struct was generated from the following file:

- iir/Butterworth.h

## 5.42 Iir::Bessel::BandStopBase Struct Reference

Inheritance diagram for Iir::Bessel::BandStopBase:

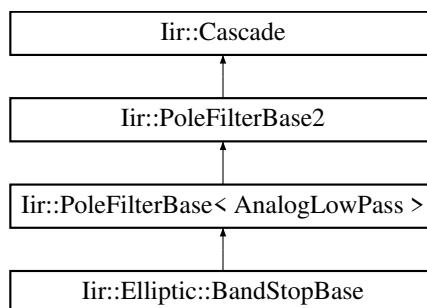


The documentation for this struct was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

## 5.43 Iir::Elliptic::BandStopBase Struct Reference

Inheritance diagram for Iir::Elliptic::BandStopBase:

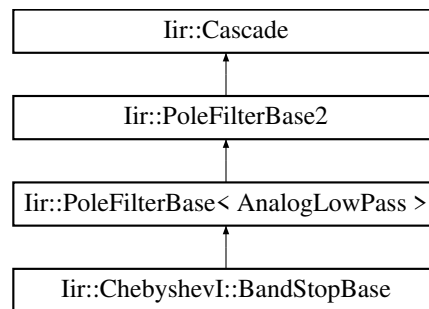


The documentation for this struct was generated from the following files:

- iir/Elliptic.h
- iir/Elliptic.cpp

## 5.44 Iir::ChebyshevI::BandStopBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::BandStopBase:

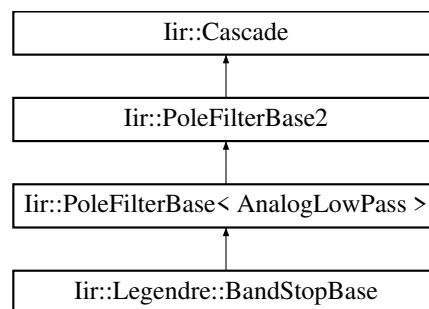


The documentation for this struct was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

## 5.45 Iir::Legendre::BandStopBase Struct Reference

Inheritance diagram for Iir::Legendre::BandStopBase:

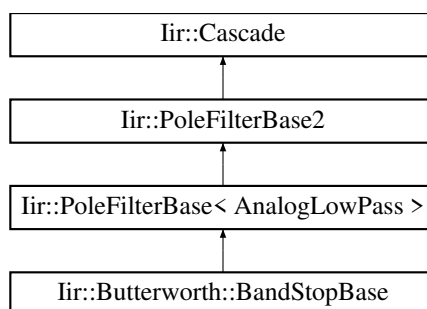


The documentation for this struct was generated from the following files:

- iir/Legendre.h
- iir/Legendre.cpp

## 5.46 Iir::Butterworth::BandStopBase Struct Reference

Inheritance diagram for Iir::Butterworth::BandStopBase:

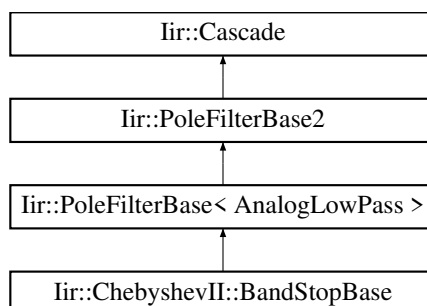


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

#### 5.47 Iir::ChebyshevII::BandStopBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::BandStopBase:



The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

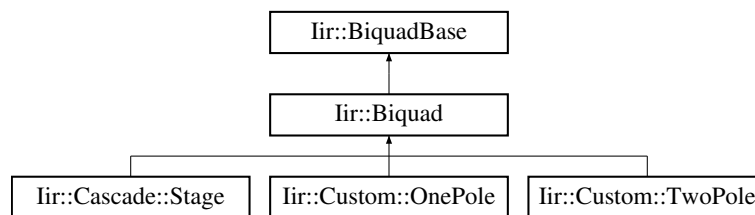
#### 5.48 Iir::BandStopTransform Class Reference

The documentation for this class was generated from the following files:

- iir/PoleFilter.h
- iir/PoleFilter.cpp

## 5.49 Iir::Biquad Class Reference

Inheritance diagram for Iir::Biquad:

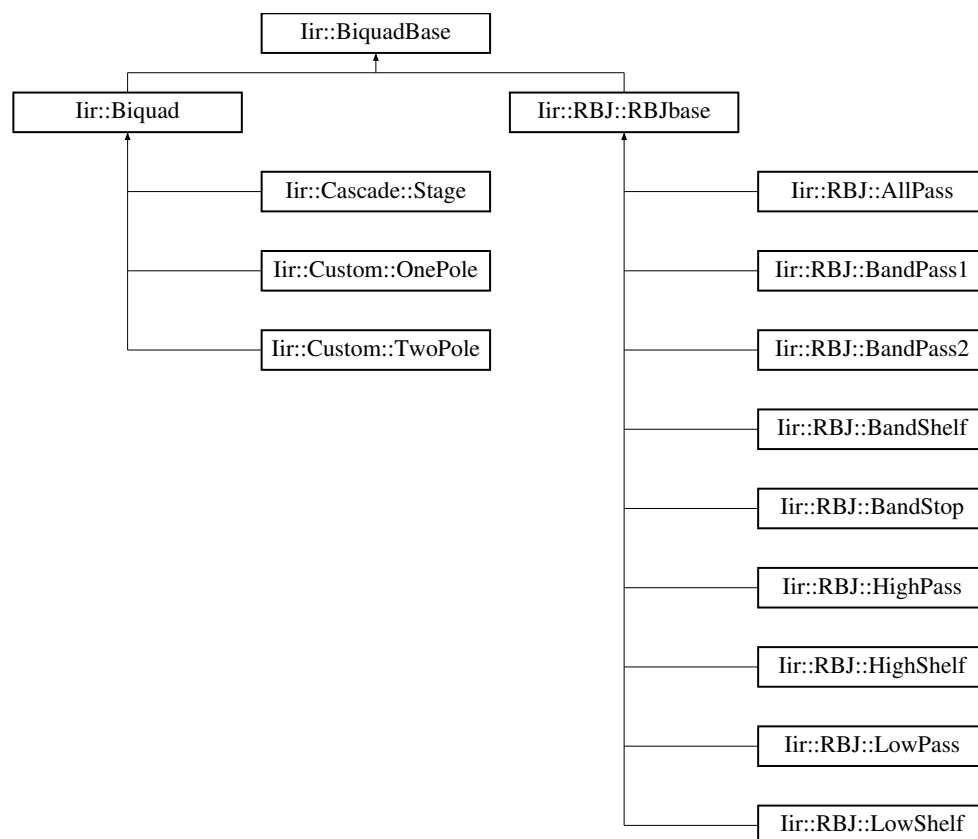


The documentation for this class was generated from the following files:

- iir/Biquad.h
- iir/Biquad.cpp

## 5.50 Iir::BiquadBase Class Reference

Inheritance diagram for Iir::BiquadBase:



### Classes

- struct [State](#)

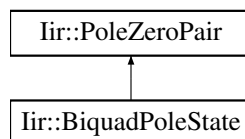
The documentation for this class was generated from the following files:

- iir/Biquad.h
- iir/Biquad.cpp



## 5.51 Iir::BiquadPoleState Struct Reference

Inheritance diagram for Iir::BiquadPoleState:

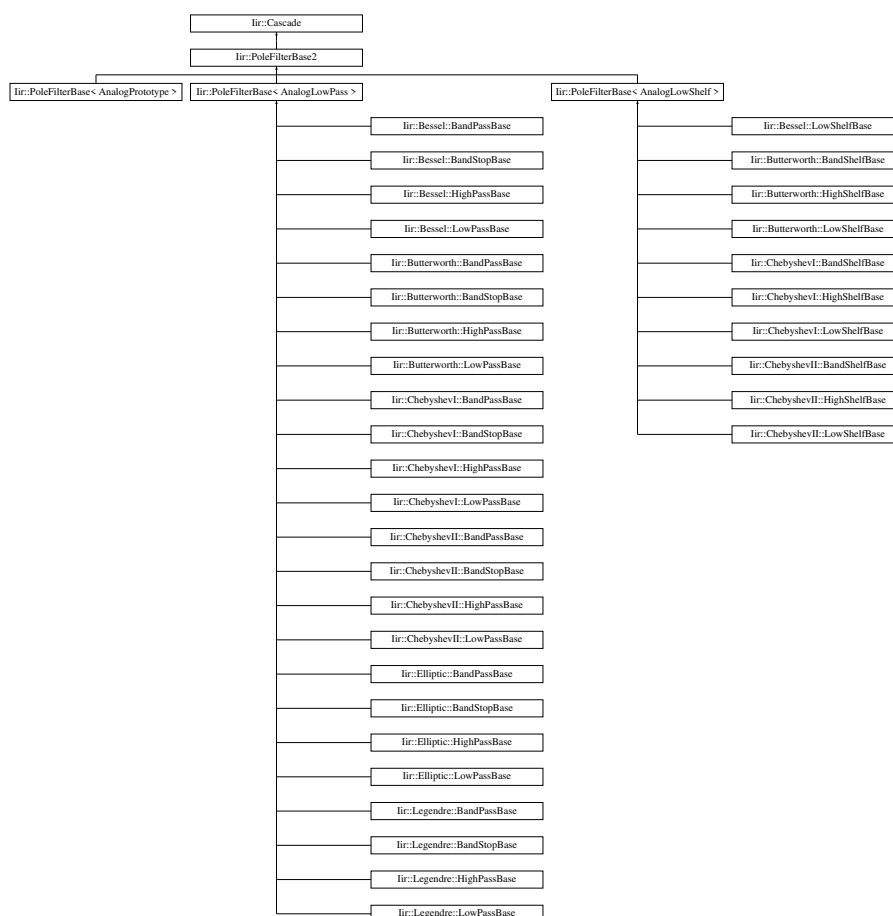


The documentation for this struct was generated from the following files:

- iir/Biquad.h
- iir/Biquad.cpp

## 5.52 Iir::Cascade Class Reference

Inheritance diagram for Iir::Cascade:



#### Classes

- struct [Stage](#)
- struct [Storage](#)

The documentation for this class was generated from the following files:

- iir/Cascade.h
- iir/Cascade.cpp

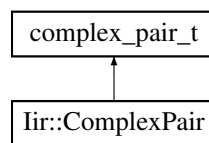
#### 5.53 Iir::CascadeStages< MaxStages, StateType > Class Template Reference

The documentation for this class was generated from the following file:

- iir/Cascade.h

#### 5.54 Iir::ComplexPair Struct Reference

Inheritance diagram for Iir::ComplexPair:



The documentation for this struct was generated from the following file:

- iir/Types.h

#### 5.55 Iir::DirectFormI Class Reference

The documentation for this class was generated from the following file:

- iir/State.h

#### 5.56 Iir::DirectFormII Class Reference

The documentation for this class was generated from the following file:

- iir/State.h

## 5.57 Iir::EnvelopeFollower< Channels, Value > Class Template Reference

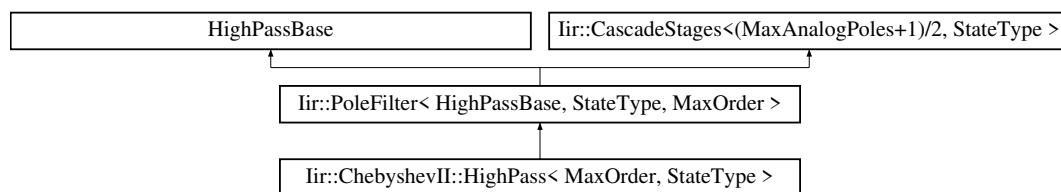
The documentation for this class was generated from the following file:

- iir/Utilities.h

## 5.58 Iir::ChebyshevII::HighPass< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for Iir::ChebyshevII::HighPass< MaxOrder, StateType >:



### Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double stopBandDb)

### 5.58.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::HighPass< MaxOrder, StateType >
```

[ChebyshevII](#) highpass filter

### 5.58.2 Member Function Documentation

#### 5.58.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevII::HighPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double stopBandDb ) [inline]
```

Calculates the coefficients of the filter

#### Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>stopBandDb</i>	Permitted ripples in dB in the stopband

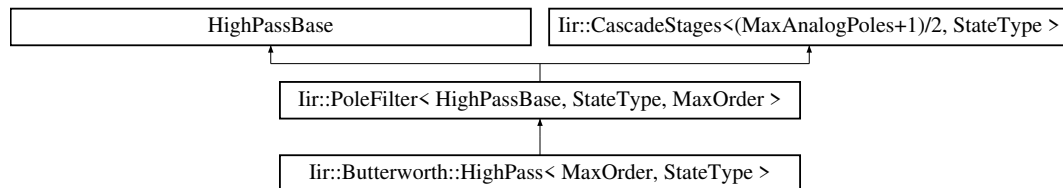
The documentation for this struct was generated from the following file:

- `iir/ChebyshevII.h`

## 5.59 `lir::Butterworth::HighPass< MaxOrder, StateType >` Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for `lir::Butterworth::HighPass< MaxOrder, StateType >`:



### Public Member Functions

- `void setup (double sampleRate, double cutoffFrequency)`

#### 5.59.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct lir::Butterworth::HighPass< MaxOrder, StateType >
```

[Butterworth](#) Highpass filter.

#### 5.59.2 Member Function Documentation

##### 5.59.2.1 `setup()`

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void lir::Butterworth::HighPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency ) [inline]
```

Calculates the coefficients

#### Parameters

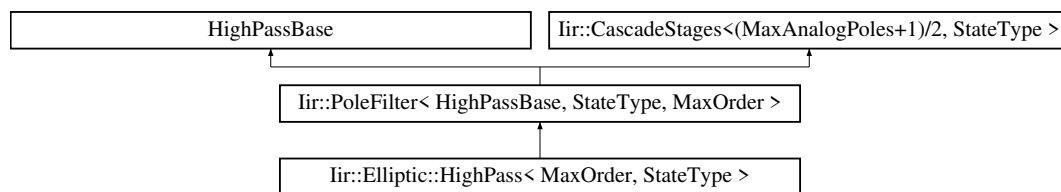
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff

The documentation for this struct was generated from the following file:

- `iir/Butterworth.h`

## 5.60 `Iir::Elliptic::HighPass< MaxOrder, StateType >` Struct Template Reference

Inheritance diagram for `Iir::Elliptic::HighPass< MaxOrder, StateType >`:



### Public Member Functions

- `void setup (double sampleRate, double cutoffFrequency, double rippleDb, double rolloff)`

#### 5.60.1 Member Function Documentation

##### 5.60.1.1 `setup()`

```

template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Elliptic::HighPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double rippleDb,
    double rolloff ) [inline]
  
```

Calculates the coefficients of the filter

#### Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>rippleDb</i>	Permitted ripples in dB in the passband
<i>rolloff</i>	Rolloff from the pass- to stopband

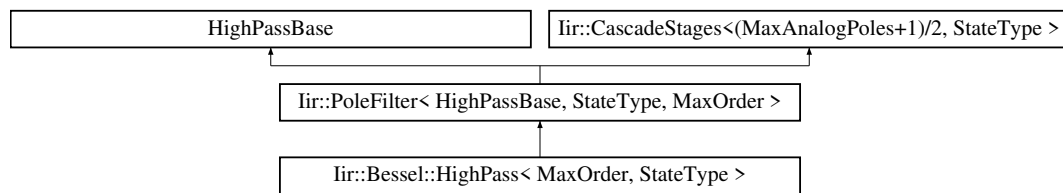
The documentation for this struct was generated from the following file:

- `iir/Elliptic.h`

## 5.61 `Iir::Bessel::HighPass< MaxOrder, StateType >` Struct Template Reference

```
#include <Bessel.h>
```

Inheritance diagram for Iir::Bessel::HighPass< MaxOrder, StateType >:



#### Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency)

##### 5.61.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Bessel::HighPass< MaxOrder, StateType >
```

[Bessel](#) Highpass.

##### 5.61.2 Member Function Documentation

###### 5.61.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Bessel::HighPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency ) [inline]
```

Calculate the coefficients

#### Parameters

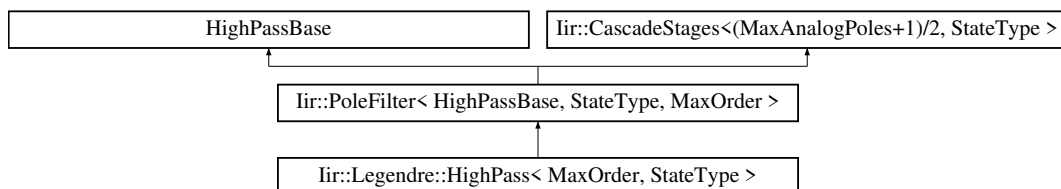
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency

The documentation for this struct was generated from the following file:

- iir/Bessel.h

## 5.62 Iir::Legendre::HighPass< MaxOrder, StateType > Struct Template Reference

Inheritance diagram for Iir::Legendre::HighPass< MaxOrder, StateType >:



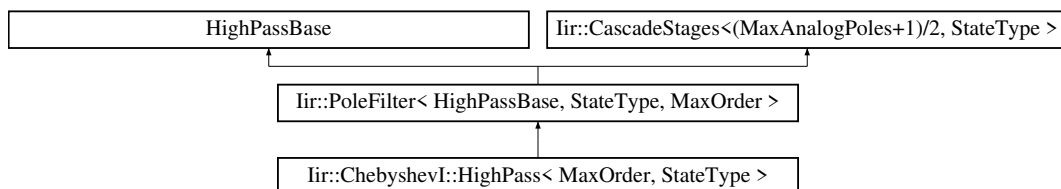
The documentation for this struct was generated from the following file:

- iir/Legendre.h

### 5.63 Iir::ChebyshevI::HighPass< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for Iir::ChebyshevI::HighPass< MaxOrder, StateType >:



#### Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double rippleDb)

#### 5.63.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::HighPass< MaxOrder, StateType >
```

[ChebyshevI](#) highpass filter

#### 5.63.2 Member Function Documentation

##### 5.63.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevI::HighPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double rippleDb ) [inline]
```

Calculates the coefficients of the filter

## Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>rippleDb</i>	Permitted ripples in dB in the passband

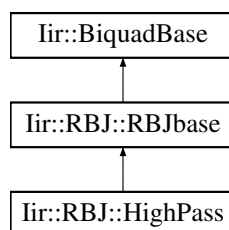
The documentation for this struct was generated from the following file:

- iir/ChebyshevI.h

## 5.64 Iir::RBJ::HighPass Struct Reference

```
#include <RBJ.h>
```

Inheritance diagram for Iir::RBJ::HighPass:



## Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double q)

## 5.64.1 Detailed Description

Highpass.

## 5.64.2 Member Function Documentation

## 5.64.2.1 setup()

```
void Iir::RBJ::HighPass::setup (
    double sampleRate,
    double cutoffFrequency,
    double q )
```

Calculates the coefficients



## Parameters

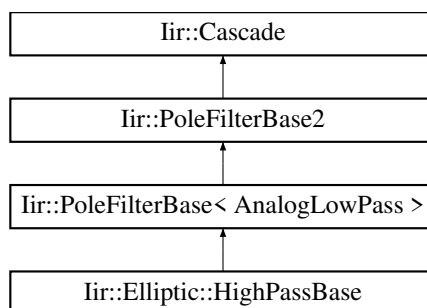
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency
<i>q</i>	Q factor determines the resonance peak at the cutoff.

The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

### 5.65 Iir::Elliptic::HighPassBase Struct Reference

Inheritance diagram for Iir::Elliptic::HighPassBase:

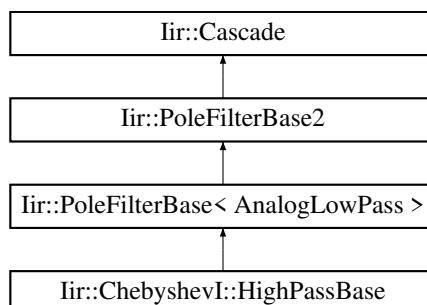


The documentation for this struct was generated from the following files:

- iir/Elliptic.h
- iir/Elliptic.cpp

### 5.66 Iir::ChebyshevI::HighPassBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::HighPassBase:

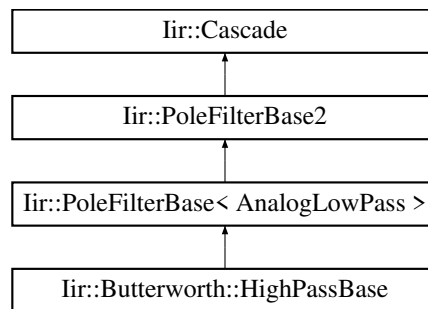


The documentation for this struct was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

## 5.67 Iir::Butterworth::HighPassBase Struct Reference

Inheritance diagram for Iir::Butterworth::HighPassBase:

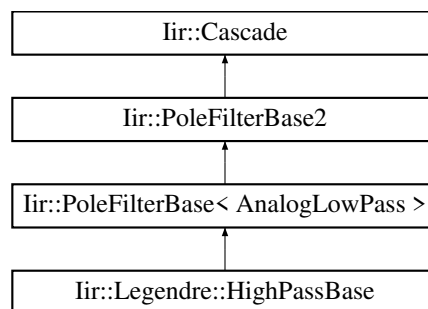


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

## 5.68 Iir::Legendre::HighPassBase Struct Reference

Inheritance diagram for Iir::Legendre::HighPassBase:

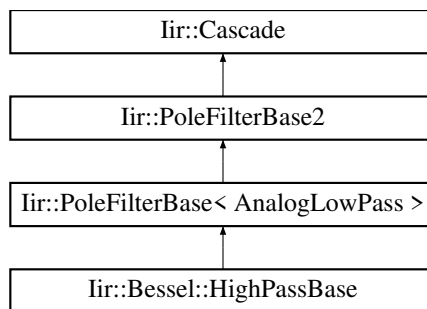


The documentation for this struct was generated from the following files:

- iir/Legendre.h
- iir/Legendre.cpp

## 5.69 Iir::Bessel::HighPassBase Struct Reference

Inheritance diagram for Iir::Bessel::HighPassBase:

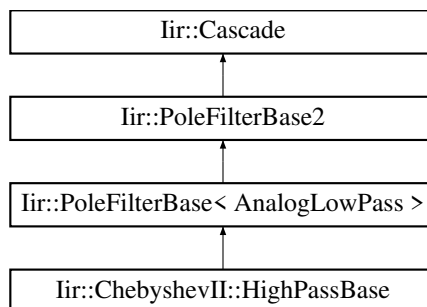


The documentation for this struct was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

### 5.70 Iir::ChebyshevII::HighPassBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::HighPassBase:



The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

### 5.71 Iir::HighPassTransform Class Reference

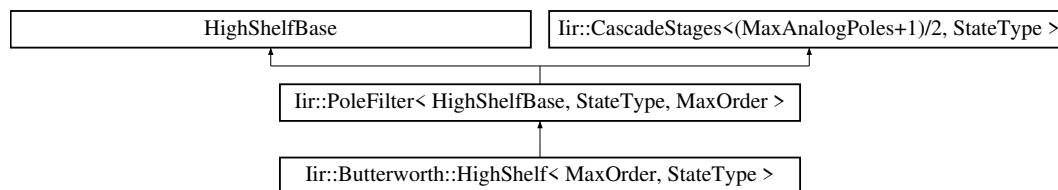
The documentation for this class was generated from the following files:

- iir/PoleFilter.h
- iir/PoleFilter.cpp

## 5.72 Iir::Butterworth::HighShelf&lt; MaxOrder, StateType &gt; Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for Iir::Butterworth::HighShelf< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double gainDb)

## 5.72.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Butterworth::HighShelf< MaxOrder, StateType >
```

Butterhworth high shelf filter. Call the method "setup (int order, double sampleRate, double cutoffFrequency, double gainDb);"

## 5.72.2 Member Function Documentation

## 5.72.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Butterworth::HighShelf< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double gainDb ) [inline]
```

Calculates the coefficients

## Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff
<i>gainDb</i>	Gain in dB of the filter in the passband

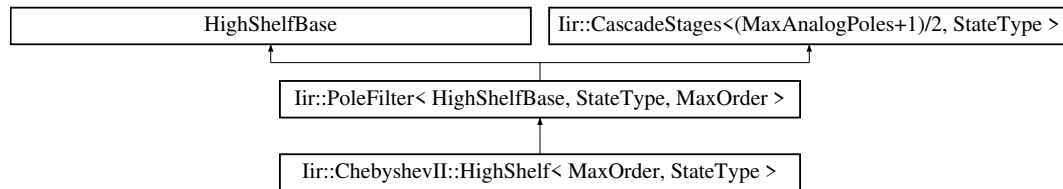
The documentation for this struct was generated from the following file:

- iir/Butterworth.h

### 5.73 `Iir::ChebyshevII::HighShelf< MaxOrder, StateType >` Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for `Iir::ChebyshevII::HighShelf< MaxOrder, StateType >`:



#### 5.73.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::HighShelf< MaxOrder, StateType >
```

[ChebyshevII](#) high shelf filter. Init with "setup (int order, double sampleRate, double cutoffFrequency, double gainDb, double minimumStopBandRejectionInDB);"

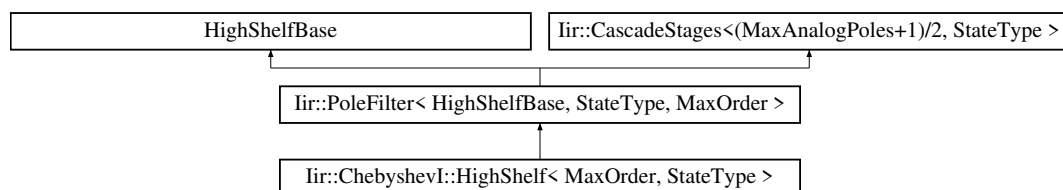
The documentation for this struct was generated from the following file:

- `iir/ChebyshevII.h`

### 5.74 `Iir::ChebyshevI::HighShelf< MaxOrder, StateType >` Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for `Iir::ChebyshevI::HighShelf< MaxOrder, StateType >`:



#### 5.74.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::HighShelf< MaxOrder, StateType >
```

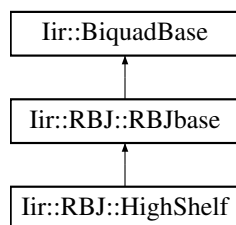
[ChebyshevI](#) high shelf filter

The documentation for this struct was generated from the following file:

- `iir/ChebyshevI.h`

## 5.75 Iir::RBJ::HighShelf Struct Reference

Inheritance diagram for Iir::RBJ::HighShelf:



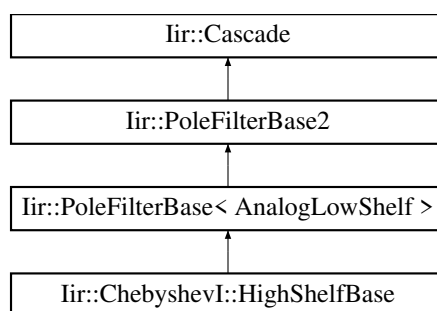
### Additional Inherited Members

The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

## 5.76 Iir::ChebyshevI::HighShelfBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::HighShelfBase:

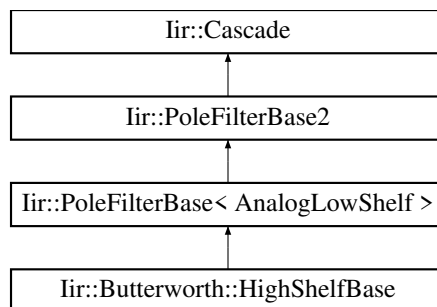


The documentation for this struct was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

### 5.77 Iir::Butterworth::HighShelfBase Struct Reference

Inheritance diagram for Iir::Butterworth::HighShelfBase:

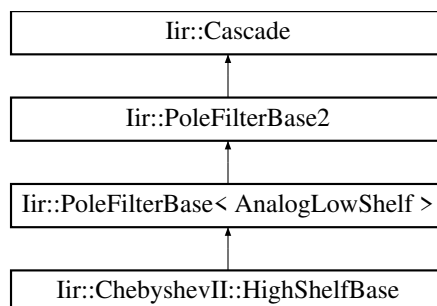


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

### 5.78 Iir::ChebyshevII::HighShelfBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::HighShelfBase:



The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

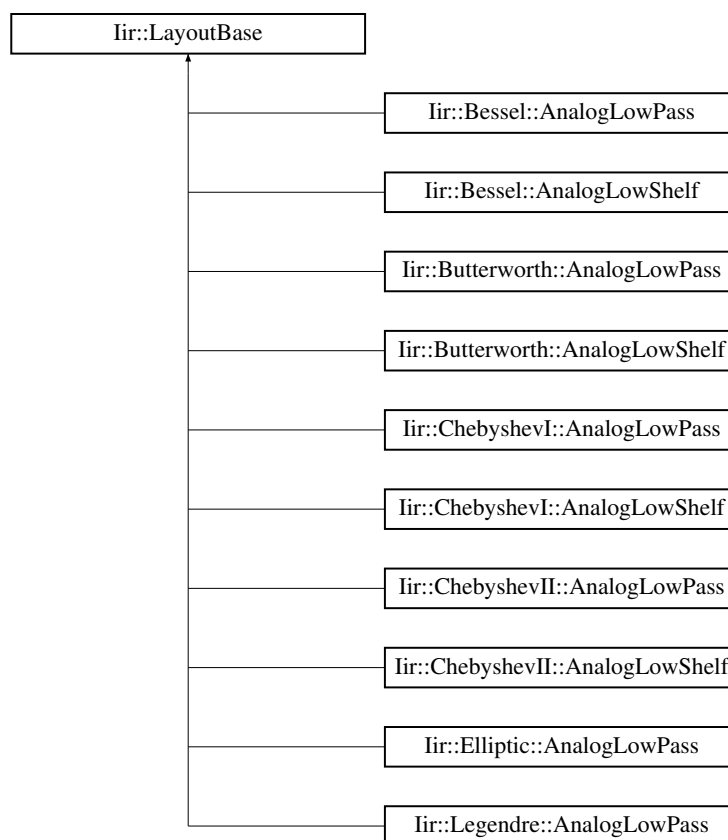
### 5.79 Iir::Layout< MaxPoles > Class Template Reference

The documentation for this class was generated from the following file:

- iir/Layout.h

## 5.80 Iir::LayoutBase Class Reference

Inheritance diagram for Iir::LayoutBase:



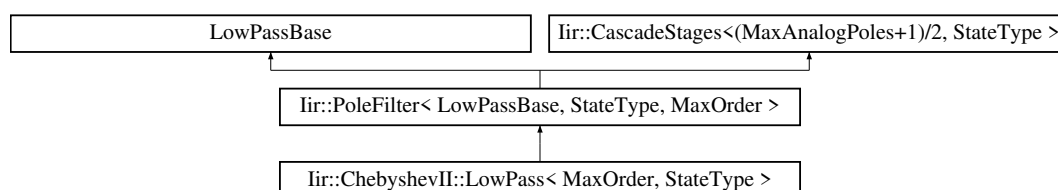
The documentation for this class was generated from the following file:

- iir/Layout.h

## 5.81 Iir::ChebyshevII::LowPass&lt; MaxOrder, StateType &gt; Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for Iir::ChebyshevII::LowPass< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double stopBandDb)



### 5.81.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::LowPass< MaxOrder, StateType >
```

[ChebyshevII](#) lowpass filter

### 5.81.2 Member Function Documentation

#### 5.81.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevII::LowPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double stopBandDb ) [inline]
```

Calculates the coefficients of the filter

#### Parameters

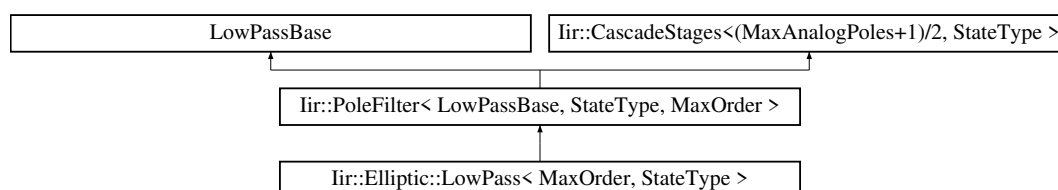
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>stopBandDb</i>	Permitted ripples in dB in the stopband

The documentation for this struct was generated from the following file:

- [iir/ChebyshevII.h](#)

## 5.82 Iir::Elliptic::LowPass< MaxOrder, StateType > Struct Template Reference

Inheritance diagram for Iir::Elliptic::LowPass< MaxOrder, StateType >:



#### Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double rippleDb, double rolloff)

## 5.82.1 Member Function Documentation

5.82.1.1 `setup()`

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Elliptic::LowPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double rippleDb,
    double rolloff ) [inline]
```

Calculates the coefficients of the filter

## Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>rippleDb</i>	Permitted ripples in dB in the passband
<i>rolloff</i>	Rolloff from the pass- to stopband

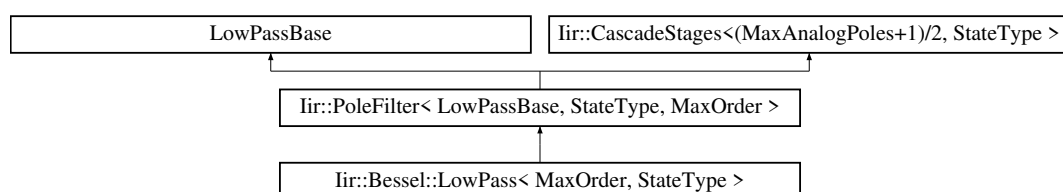
The documentation for this struct was generated from the following file:

- `iir/Elliptic.h`

5.83 `Iir::Bessel::LowPass< MaxOrder, StateType >` Struct Template Reference

```
#include <Bessel.h>
```

Inheritance diagram for `Iir::Bessel::LowPass< MaxOrder, StateType >`:



## Public Member Functions

- void `setup` (double `sampleRate`, double `cutoffFrequency`)

## 5.83.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Bessel::LowPass< MaxOrder, StateType >
```

[Bessel](#) Lowpass

### 5.83.2 Member Function Documentation

#### 5.83.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Bessel::LowPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency ) [inline]
```

Calculate the coefficients

#### Parameters

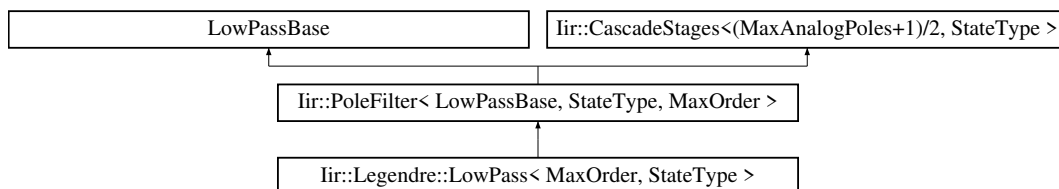
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency

The documentation for this struct was generated from the following file:

- iir/Bessel.h

### 5.84 Iir::Legendre::LowPass< MaxOrder, StateType > Struct Template Reference

Inheritance diagram for Iir::Legendre::LowPass< MaxOrder, StateType >:



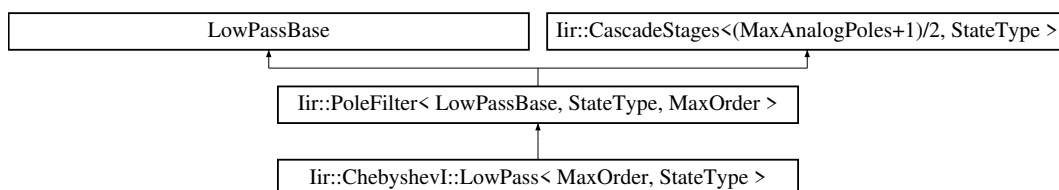
The documentation for this struct was generated from the following file:

- iir/Legendre.h

### 5.85 Iir::ChebyshevI::LowPass< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for Iir::ChebyshevI::LowPass< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double rippleDb)

## 5.85.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::LowPass< MaxOrder, StateType >
```

[ChebyshevI](#) lowpass filter

## 5.85.2 Member Function Documentation

## 5.85.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevI::LowPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double rippleDb ) [inline]
```

Calculates the coefficients of the filter

## Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>rippleDb</i>	Permitted ripples in dB in the passband

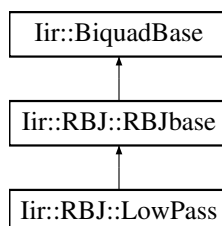
The documentation for this struct was generated from the following file:

- iir/ChebyshevI.h

## 5.86 Iir::RBJ::LowPass Struct Reference

```
#include <RBJ.h>
```

Inheritance diagram for Iir::RBJ::LowPass:



## Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double q)

### 5.86.1 Detailed Description

Lowpass.

### 5.86.2 Member Function Documentation

#### 5.86.2.1 setup()

```
void Iir::RBJ::LowPass::setup (
    double sampleRate,
    double cutoffFrequency,
    double q )
```

Calculates the coefficients

#### Parameters

<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency
<i>q</i>	Q factor determines the resonance peak at the cutoff.

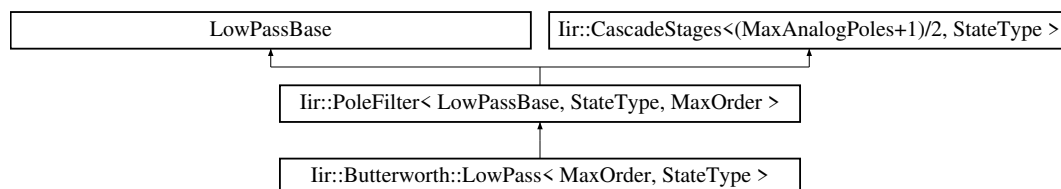
The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

## 5.87 Iir::Butterworth::LowPass< MaxOrder, StateType > Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for Iir::Butterworth::LowPass< MaxOrder, StateType >:



## Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency)

## 5.87.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Butterworth::LowPass< MaxOrder, StateType >
```

[Butterworth](#) Lowpass filter.

## 5.87.2 Member Function Documentation

## 5.87.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Butterworth::LowPass< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency ) [inline]
```

Calculates the coefficients

## Parameters

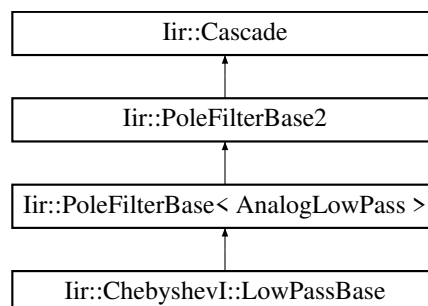
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff

The documentation for this struct was generated from the following file:

- [iir/Butterworth.h](#)

## 5.88 Iir::ChebyshevI::LowPassBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::LowPassBase:

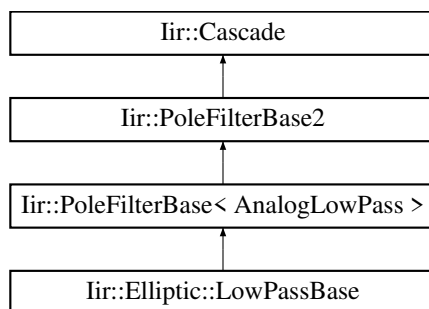


The documentation for this struct was generated from the following files:

- [iir/ChebyshevI.h](#)
- [iir/ChebyshevI.cpp](#)

### 5.89 Iir::Elliptic::LowPassBase Struct Reference

Inheritance diagram for Iir::Elliptic::LowPassBase:

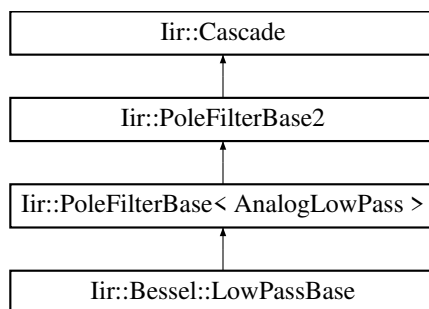


The documentation for this struct was generated from the following files:

- iir/Elliptic.h
- iir/Elliptic.cpp

### 5.90 Iir::Bessel::LowPassBase Struct Reference

Inheritance diagram for Iir::Bessel::LowPassBase:

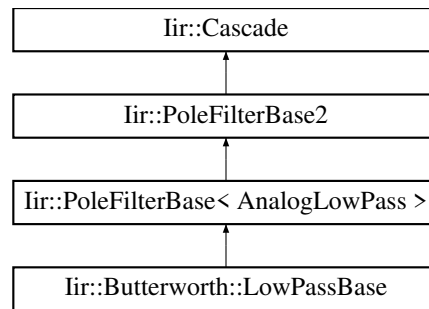


The documentation for this struct was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

### 5.91 Iir::Butterworth::LowPassBase Struct Reference

Inheritance diagram for Iir::Butterworth::LowPassBase:

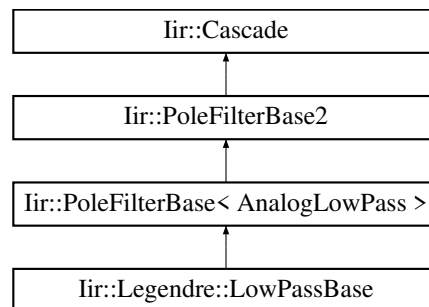


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

## 5.92 Iir::Legendre::LowPassBase Struct Reference

Inheritance diagram for Iir::Legendre::LowPassBase:

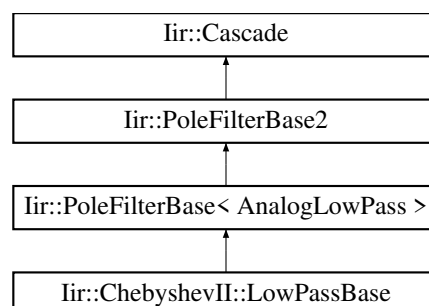


The documentation for this struct was generated from the following files:

- iir/Legendre.h
- iir/Legendre.cpp

## 5.93 Iir::ChebyshevII::LowPassBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::LowPassBase:



The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp



### 5.94 Iir::LowPassTransform Class Reference

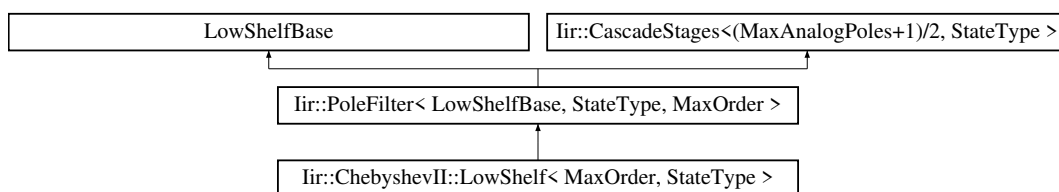
The documentation for this class was generated from the following files:

- iir/PoleFilter.h
- iir/PoleFilter.cpp

### 5.95 Iir::ChebyshevII::LowShelf< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevII.h>
```

Inheritance diagram for Iir::ChebyshevII::LowShelf< MaxOrder, StateType >:



#### 5.95.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevII::LowShelf< MaxOrder, StateType >
```

[ChebyshevII](#) low shelf filter. Init with "setup ( double sampleRate, double cutoffFrequency, double gainDb, double minimumStopBandRejectionInDB);"

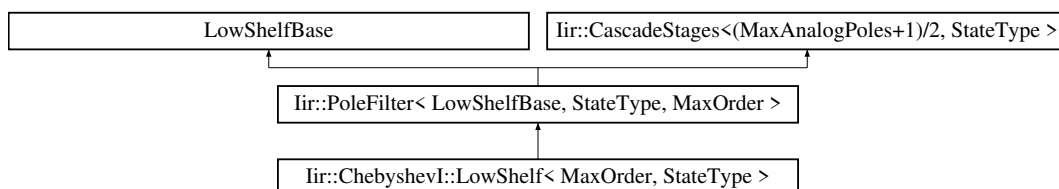
The documentation for this struct was generated from the following file:

- iir/ChebyshevII.h

### 5.96 Iir::ChebyshevI::LowShelf< MaxOrder, StateType > Struct Template Reference

```
#include <ChebyshevI.h>
```

Inheritance diagram for Iir::ChebyshevI::LowShelf< MaxOrder, StateType >:



#### Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double gainDb, double rippleDb)

## 5.96.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::ChebyshevI::LowShelf< MaxOrder, StateType >
```

[ChebyshevI](#) low shelf filter

## 5.96.2 Member Function Documentation

## 5.96.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::ChebyshevI::LowShelf< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double gainDb,
    double rippleDb ) [inline]
```

Calculates the coefficients of the filter

## Parameters

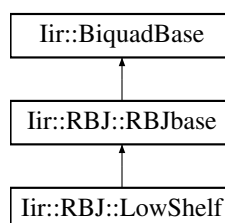
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff frequency.
<i>gainDb</i>	Gain in the passband
<i>rippleDb</i>	Permitted ripples in dB in the passband

The documentation for this struct was generated from the following file:

- iir/ChebyshevI.h

## 5.97 Iir::RBJ::LowShelf Struct Reference

Inheritance diagram for Iir::RBJ::LowShelf:



## Additional Inherited Members

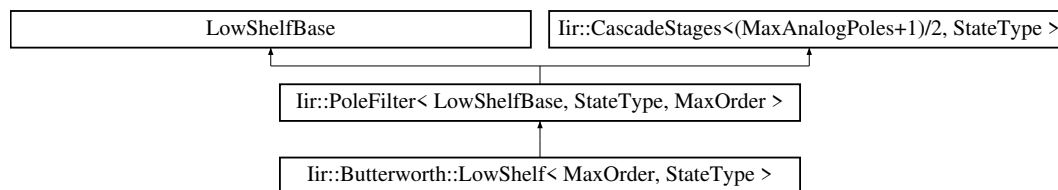
The documentation for this struct was generated from the following files:

- iir/RBJ.h
- iir/RBJ.cpp

## 5.98 Iir::Butterworth::LowShelf< MaxOrder, StateType > Struct Template Reference

```
#include <Butterworth.h>
```

Inheritance diagram for Iir::Butterworth::LowShelf< MaxOrder, StateType >:



### Public Member Functions

- void [setup](#) (double sampleRate, double cutoffFrequency, double gainDb)

#### 5.98.1 Detailed Description

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
struct Iir::Butterworth::LowShelf< MaxOrder, StateType >
```

[Butterworth](#) low shelf filter (LP with gain).

#### 5.98.2 Member Function Documentation

##### 5.98.2.1 setup()

```
template<int MaxOrder, class StateType = DEFAULT_STATE>
void Iir::Butterworth::LowShelf< MaxOrder, StateType >::setup (
    double sampleRate,
    double cutoffFrequency,
    double gainDb ) [inline]
```

Calculates the coefficients

#### Parameters

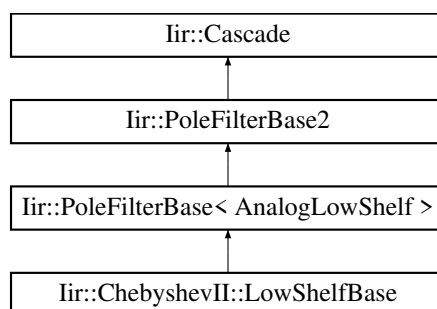
<i>sampleRate</i>	Sampling rate
<i>cutoffFrequency</i>	Cutoff
<i>gainDb</i>	Gain in dB of the filter in the passband

The documentation for this struct was generated from the following file:

- iir/Butterworth.h

## 5.99 Iir::ChebyshevII::LowShelfBase Struct Reference

Inheritance diagram for Iir::ChebyshevII::LowShelfBase:

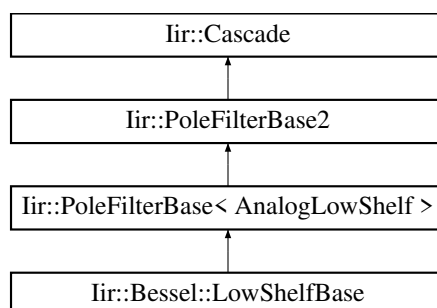


The documentation for this struct was generated from the following files:

- iir/ChebyshevII.h
- iir/ChebyshevII.cpp

## 5.100 Iir::Bessel::LowShelfBase Struct Reference

Inheritance diagram for Iir::Bessel::LowShelfBase:

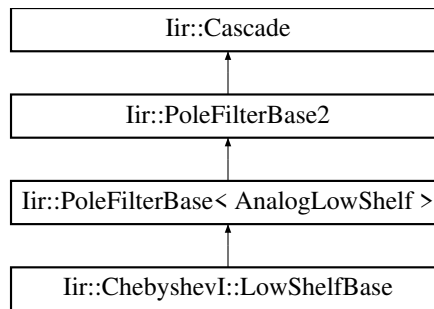


The documentation for this struct was generated from the following files:

- iir/Bessel.h
- iir/Bessel.cpp

## 5.101 Iir::ChebyshevI::LowShelfBase Struct Reference

Inheritance diagram for Iir::ChebyshevI::LowShelfBase:

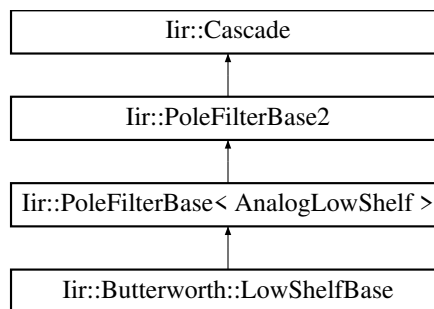


The documentation for this struct was generated from the following files:

- iir/ChebyshevI.h
- iir/ChebyshevI.cpp

### 5.102 Iir::Butterworth::LowShelfBase Struct Reference

Inheritance diagram for `Iir::Butterworth::LowShelfBase`:

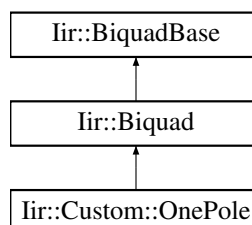


The documentation for this struct was generated from the following files:

- iir/Butterworth.h
- iir/Butterworth.cpp

### 5.103 Iir::Custom::OnePole Struct Reference

Inheritance diagram for `Iir::Custom::OnePole`:

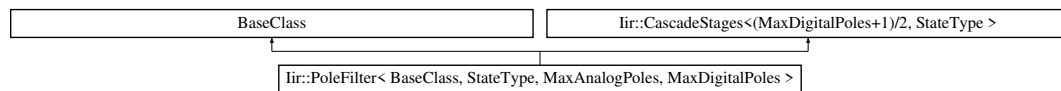


The documentation for this struct was generated from the following files:

- iir/Custom.h
- iir/Custom.cpp

## 5.104 Iir::PoleFilter&lt; BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles &gt; Struct Template Reference

Inheritance diagram for Iir::PoleFilter< BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles >:

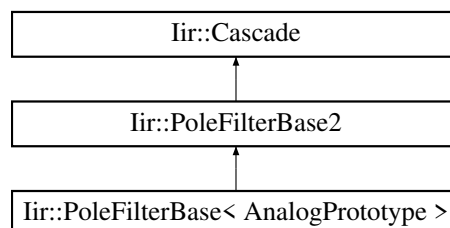


The documentation for this struct was generated from the following file:

- iir/PoleFilter.h

## 5.105 Iir::PoleFilterBase&lt; AnalogPrototype &gt; Class Template Reference

Inheritance diagram for Iir::PoleFilterBase< AnalogPrototype >:

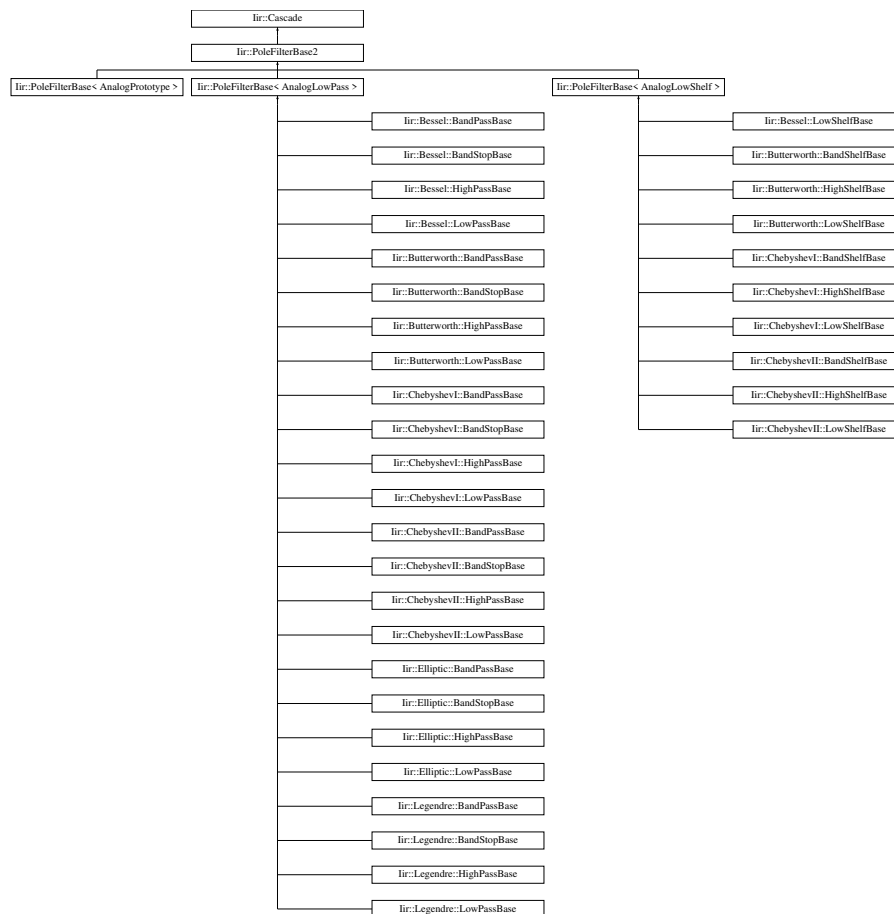


The documentation for this class was generated from the following file:

- iir/PoleFilter.h

## 5.106 Iir::PoleFilterBase2 Class Reference

Inheritance diagram for Iir::PoleFilterBase2:

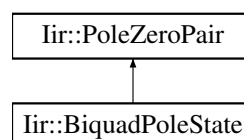


The documentation for this class was generated from the following file:

- iir/PoleFilter.h

## 5.107 Iir::PoleZeroPair Struct Reference

Inheritance diagram for Iir::PoleZeroPair:

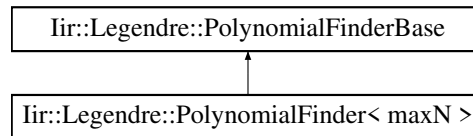


The documentation for this struct was generated from the following file:

- iir/Types.h

## 5.108 Iir::Legendre::PolynomialFinder&lt; maxN &gt; Class Template Reference

Inheritance diagram for Iir::Legendre::PolynomialFinder< maxN >:

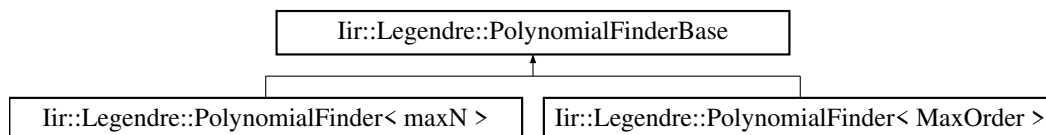


The documentation for this class was generated from the following file:

- iir/Legendre.h

## 5.109 Iir::Legendre::PolynomialFinderBase Class Reference

Inheritance diagram for Iir::Legendre::PolynomialFinderBase:



The documentation for this class was generated from the following files:

- iir/Legendre.h
- iir/Legendre.cpp

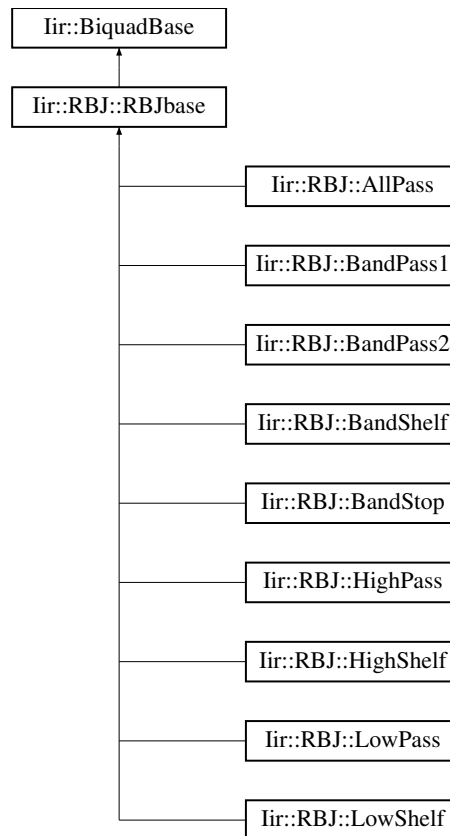
## 5.110 Iir::RBJ::RBJbase Struct Reference

The base class of all [RBJ](#) filters.

```
#include <RBJ.h>
```

Inheritance diagram for Iir::RBJ::RBJbase:





### Public Member Functions

- `template<typename Sample >`  
`Sample filter (Sample s)`  
*filter operation*
- `void reset ()`  
*resets the delay lines to zero*
- `const DirectFormI & getState ()`  
*gets the delay lines (=state) of the filter*

#### 5.110.1 Detailed Description

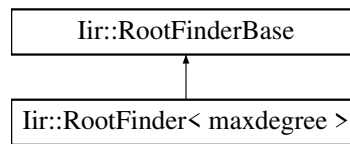
The base class of all [RBJ](#) filters.

The documentation for this struct was generated from the following file:

- `iir/RBJ.h`

## 5.111 Iir::RootFinder&lt; maxdegree &gt; Struct Template Reference

Inheritance diagram for Iir::RootFinder< maxdegree >:

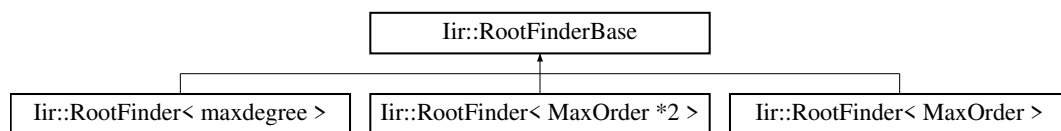


The documentation for this struct was generated from the following file:

- iir/RootFinder.h

## 5.112 Iir::RootFinderBase Class Reference

Inheritance diagram for Iir::RootFinderBase:



## Classes

- struct [Array](#)

The documentation for this class was generated from the following files:

- iir/RootFinder.h
- iir/RootFinder.cpp

## 5.113 Iir::SlopeDetector&lt; Channels, Value &gt; Class Template Reference

The documentation for this class was generated from the following file:

- iir/Utilities.h

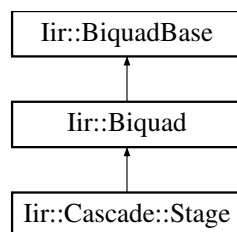
## 5.114 Iir::Elliptic::Solver Class Reference

The documentation for this class was generated from the following files:

- iir/Elliptic.h
- iir/Elliptic.cpp

### 5.115 Iir::Cascade::Stage Struct Reference

Inheritance diagram for Iir::Cascade::Stage:

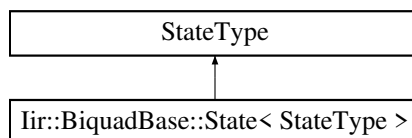


The documentation for this struct was generated from the following file:

- iir/Cascade.h

### 5.116 Iir::BiquadBase::State< StateType > Struct Template Reference

Inheritance diagram for Iir::BiquadBase::State< StateType >:



The documentation for this struct was generated from the following file:

- iir/Biquad.h

### 5.117 Iir::Cascade::Storage Struct Reference

The documentation for this struct was generated from the following file:

- iir/Cascade.h

### 5.118 Iir::TransposedDirectFormI Class Reference

The documentation for this class was generated from the following file:

- iir/State.h

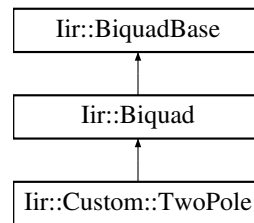
### 5.119 Iir::TransposedDirectFormII Class Reference

The documentation for this class was generated from the following file:

- iir/State.h

### 5.120 Iir::Custom::TwoPole Struct Reference

Inheritance diagram for Iir::Custom::TwoPole:

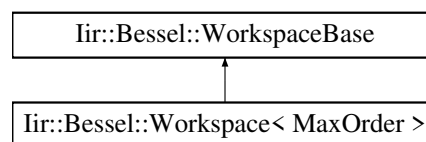


The documentation for this struct was generated from the following files:

- iir/Custom.h
- iir/Custom.cpp

### 5.121 Iir::Bessel::Workspace< MaxOrder > Struct Template Reference

Inheritance diagram for Iir::Bessel::Workspace< MaxOrder >:

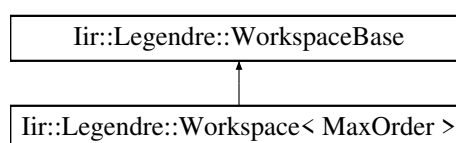


The documentation for this struct was generated from the following file:

- iir/Bessel.h

### 5.122 Iir::Legendre::Workspace< MaxOrder > Struct Template Reference

Inheritance diagram for Iir::Legendre::Workspace< MaxOrder >:

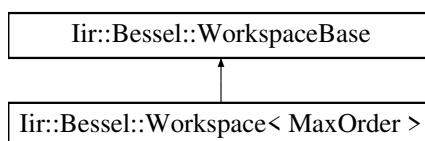


The documentation for this struct was generated from the following file:

- iir/Legendre.h

### 5.123 Iir::Bessel::WorkspaceBase Struct Reference

Inheritance diagram for Iir::Bessel::WorkspaceBase:

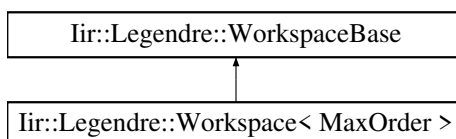


The documentation for this struct was generated from the following file:

- iir/Bessel.h

### 5.124 Iir::Legendre::WorkspaceBase Struct Reference

Inheritance diagram for Iir::Legendre::WorkspaceBase:



The documentation for this struct was generated from the following file:

- iir/Legendre.h

## Index

lir::BandPassTransform, [28](#)  
lir::BandStopTransform, [40](#)  
lir::Bessel, [11](#)  
lir::Bessel::AnalogLowPass, [16](#)  
lir::Bessel::AnalogLowShelf, [17](#)  
lir::Bessel::BandPass  
    setup, [21](#)  
lir::Bessel::BandPass< MaxOrder, StateType >, [21](#)  
lir::Bessel::BandPassBase, [27](#)  
lir::Bessel::BandStop  
    setup, [35](#)  
lir::Bessel::BandStop< MaxOrder, StateType >, [35](#)  
lir::Bessel::BandStopBase, [38](#)  
lir::Bessel::HighPass  
    setup, [47](#)  
lir::Bessel::HighPass< MaxOrder, StateType >, [46](#)  
lir::Bessel::HighPassBase, [51](#)  
lir::Bessel::LowPass  
    setup, [60](#)  
lir::Bessel::LowPass< MaxOrder, StateType >, [59](#)  
lir::Bessel::LowPassBase, [64](#)  
lir::Bessel::LowShelfBase, [69](#)  
lir::Bessel::Workspace< MaxOrder >, [77](#)  
lir::Bessel::WorkspaceBase, [78](#)  
lir::Biquad, [41](#)  
lir::BiquadBase, [41](#)  
lir::BiquadBase::State< StateType >, [76](#)  
lir::BiquadPoleState, [42](#)  
lir::Butterworth, [12](#)  
lir::Butterworth::AnalogLowPass, [15](#)  
lir::Butterworth::AnalogLowShelf, [17](#)  
lir::Butterworth::BandPass  
    setup, [23](#)  
lir::Butterworth::BandPass< MaxOrder, StateType >, [23](#)  
lir::Butterworth::BandPassBase, [26](#)  
lir::Butterworth::BandShelf  
    setup, [29](#)  
lir::Butterworth::BandShelf< MaxOrder, StateType >, [28](#)  
lir::Butterworth::BandShelfBase, [31](#)  
lir::Butterworth::BandStop  
    setup, [37](#)  
lir::Butterworth::BandStop< MaxOrder, StateType >, [37](#)  
lir::Butterworth::BandStopBase, [39](#)  
lir::Butterworth::HighPass  
    setup, [45](#)  
lir::Butterworth::HighPass< MaxOrder, StateType >, [45](#)  
lir::Butterworth::HighPassBase, [51](#)  
lir::Butterworth::HighShelf  
    setup, [53](#)  
lir::Butterworth::HighShelf< MaxOrder, StateType >, [53](#)  
lir::Butterworth::HighShelfBase, [56](#)  
lir::Butterworth::LowPass  
    setup, [63](#)  
lir::Butterworth::LowPass< MaxOrder, StateType >, [62](#)  
lir::Butterworth::LowPassBase, [64](#)  
lir::Butterworth::LowShelf  
    setup, [68](#)  
lir::Butterworth::LowShelf< MaxOrder, StateType >, [68](#)  
lir::Butterworth::LowShelfBase, [70](#)  
lir::Cascade, [42](#)  
lir::Cascade::Stage, [76](#)  
lir::Cascade::Storage, [76](#)  
lir::CascadeStages< MaxStages, StateType >, [43](#)  
lir::ChebyshevI::AnalogLowPass, [15](#)  
lir::ChebyshevI::AnalogLowShelf, [18](#)  
lir::ChebyshevI::BandPass  
    setup, [22](#)  
lir::ChebyshevI::BandPass< MaxOrder, StateType >, [22](#)  
lir::ChebyshevI::BandPassBase, [26](#)  
lir::ChebyshevI::BandShelf< MaxOrder, StateType >, [30](#)  
lir::ChebyshevI::BandShelfBase, [31](#)  
lir::ChebyshevI::BandStop  
    setup, [34](#)  
lir::ChebyshevI::BandStop< MaxOrder, StateType >, [34](#)  
lir::ChebyshevI::BandStopBase, [39](#)  
lir::ChebyshevI::HighPass  
    setup, [48](#)  
lir::ChebyshevI::HighPass< MaxOrder, StateType >, [48](#)  
lir::ChebyshevI::HighPassBase, [50](#)  
lir::ChebyshevI::HighShelf< MaxOrder, StateType >, [54](#)  
lir::ChebyshevI::HighShelfBase, [55](#)  
lir::ChebyshevI::LowPass  
    setup, [61](#)  
lir::ChebyshevI::LowPass< MaxOrder, StateType >, [60](#)  
lir::ChebyshevI::LowPassBase, [63](#)  
lir::ChebyshevI::LowShelf  
    setup, [67](#)  
lir::ChebyshevI::LowShelf< MaxOrder, StateType >, [66](#)  
lir::ChebyshevI::LowShelfBase, [69](#)  
lir::ChebyshevII::AnalogLowPass, [17](#)  
lir::ChebyshevII::AnalogLowShelf, [18](#)  
lir::ChebyshevII::BandPass  
    setup, [19](#)  
lir::ChebyshevII::BandPass< MaxOrder, StateType >, [18](#)  
lir::ChebyshevII::BandPassBase, [28](#)  
lir::ChebyshevII::BandShelf< MaxOrder, StateType >, [29](#)  
lir::ChebyshevII::BandShelfBase, [31](#)  
lir::ChebyshevII::BandStop  
    setup, [32](#)  
lir::ChebyshevII::BandStop< MaxOrder, StateType >, [32](#)  
lir::ChebyshevII::BandStopBase, [40](#)  
lir::ChebyshevII::HighPass  
    setup, [44](#)

- lir::ChebyshevII::HighPass< MaxOrder, StateType >, 44
- lir::ChebyshevII::HighPassBase, 52
- lir::ChebyshevII::HighShelf< MaxOrder, StateType >, 54
- lir::ChebyshevII::HighShelfBase, 56
- lir::ChebyshevII::LowPass
  - setup, 58
- lir::ChebyshevII::LowPass< MaxOrder, StateType >, 57
- lir::ChebyshevII::LowPassBase, 65
- lir::ChebyshevII::LowShelf< MaxOrder, StateType >, 66
- lir::ChebyshevII::LowShelfBase, 69
- lir::ChebyshevII, 13
- lir::ChebyshevI, 12
- lir::ComplexPair, 43
- lir::Custom::OnePole, 70
- lir::Custom::TwoPole, 77
- lir::DirectFormII, 43
- lir::DirectFormI, 43
- lir::Elliptic, 13
- lir::Elliptic::AnalogLowPass, 16
- lir::Elliptic::BandPass
  - setup, 20
- lir::Elliptic::BandPass< MaxOrder, StateType >, 19
- lir::Elliptic::BandPassBase, 26
- lir::Elliptic::BandStop
  - setup, 33
- lir::Elliptic::BandStop< MaxOrder, StateType >, 33
- lir::Elliptic::BandStopBase, 38
- lir::Elliptic::HighPass
  - setup, 46
- lir::Elliptic::HighPass< MaxOrder, StateType >, 46
- lir::Elliptic::HighPassBase, 50
- lir::Elliptic::LowPass
  - setup, 59
- lir::Elliptic::LowPass< MaxOrder, StateType >, 58
- lir::Elliptic::LowPassBase, 64
- lir::Elliptic::Solver, 75
- lir::EnvelopeFollower< Channels, Value >, 44
- lir::HighPassTransform, 52
- lir::Layout< MaxPoles >, 56
- lir::LayoutBase, 57
- lir::Legendre, 14
- lir::Legendre::AnalogLowPass, 16
- lir::Legendre::BandPass< MaxOrder, StateType >, 20
- lir::Legendre::BandPassBase, 27
- lir::Legendre::BandStop< MaxOrder, StateType >, 34
- lir::Legendre::BandStopBase, 39
- lir::Legendre::HighPass< MaxOrder, StateType >, 47
- lir::Legendre::HighPassBase, 51
- lir::Legendre::LowPass< MaxOrder, StateType >, 60
- lir::Legendre::LowPassBase, 65
- lir::Legendre::PolynomialFinder< maxN >, 73
- lir::Legendre::PolynomialFinderBase, 73
- lir::Legendre::Workspace< MaxOrder >, 77
- lir::Legendre::WorkspaceBase, 78
- lir::LowPassTransform, 66
- lir::PoleFilter< BaseClass, StateType, MaxAnalogPoles, MaxDigitalPoles >, 71
- lir::PoleFilterBase< AnalogPrototype >, 71
- lir::PoleFilterBase2, 71
- lir::PoleZeroPair, 72
- lir::RBJ::AllPass, 15
- lir::RBJ::BandPass1, 24
  - setup, 24
- lir::RBJ::BandPass2, 25
  - setup, 25
- lir::RBJ::BandShelf, 30
- lir::RBJ::BandStop, 36
  - setup, 36
- lir::RBJ::HighPass, 49
  - setup, 49
- lir::RBJ::HighShelf, 55
- lir::RBJ::LowPass, 61
  - setup, 62
- lir::RBJ::LowShelf, 67
- lir::RBJ::RBJbase, 73
- lir::RBJ, 14
- lir::RootFinder< maxdegree >, 75
- lir::RootFinderBase, 75
- lir::RootFinderBase::Array, 18
- lir::SlopeDetector< Channels, Value >, 75
- lir::TransposedDirectFormII, 77
- lir::TransposedDirectFormI, 76
- setup
  - lir::Bessel::BandPass, 21
  - lir::Bessel::BandStop, 35
  - lir::Bessel::HighPass, 47
  - lir::Bessel::LowPass, 60
  - lir::Butterworth::BandPass, 23
  - lir::Butterworth::BandShelf, 29
  - lir::Butterworth::BandStop, 37
  - lir::Butterworth::HighPass, 45
  - lir::Butterworth::HighShelf, 53
  - lir::Butterworth::LowPass, 63
  - lir::Butterworth::LowShelf, 68
  - lir::ChebyshevI::BandPass, 22
  - lir::ChebyshevI::BandStop, 34
  - lir::ChebyshevI::HighPass, 48
  - lir::ChebyshevI::LowPass, 61
  - lir::ChebyshevI::LowShelf, 67
  - lir::ChebyshevII::BandPass, 19
  - lir::ChebyshevII::BandStop, 32
  - lir::ChebyshevII::HighPass, 44
  - lir::ChebyshevII::LowPass, 58
  - lir::Elliptic::BandPass, 20
  - lir::Elliptic::BandStop, 33
  - lir::Elliptic::HighPass, 46
  - lir::Elliptic::LowPass, 59
  - lir::RBJ::BandPass1, 24
  - lir::RBJ::BandPass2, 25
  - lir::RBJ::BandStop, 36
  - lir::RBJ::HighPass, 49
  - lir::RBJ::LowPass, 62