

```

In[49]:= tf = TransferFunctionModel[
  (
    
$$\frac{Z_3 Z_4}{Z_1 Z_2 + Z_3 Z_4 + Z_3 (Z_1 + Z_2)}$$

    /. {Z1 -> R1, Z2 -> R2, Z4 -> 1 / (s * C1), Z3 -> 1 / (s * C2)}
  ) *
  (
    
$$\frac{Z_3 Z_4}{Z_1 Z_2 + Z_3 Z_4 + Z_3 (Z_1 + Z_2)}$$

    /. {Z1 -> R3, Z2 -> R4, Z4 -> 1 / (s * C3), Z3 -> 1 / (s * C4)}
  )
  , s];
poles = DeleteCases[TransferFunctionPoles[tf][[1]][[1]], 0];

values = {
  R1 -> 12 000,
  R2 -> 18 000,
  R3 -> 3900,
  R4 -> 8200,
  C1 -> 100 * Power[10, -9],
  C2 -> 120 * Power[10, -9],
  C3 -> 100 * Power[10, -9],
  C4 -> 820 * Power[10, -9]
};

rUncertainty = 0.1;
cUncertainty = 0.05;
tolerances = {
  uR1 -> 12 000 * rUncertainty / Sqrt[3],
  uR2 -> 18 000 * rUncertainty / Sqrt[3],
  uR3 -> 3900 * rUncertainty / Sqrt[3],
  uR4 -> 8200 * rUncertainty / Sqrt[3],
  uC1 -> 100 * Power[10, -9] * cUncertainty / Sqrt[3],
  uC2 -> 120 * Power[10, -9] * cUncertainty / Sqrt[3],
  uC3 -> 100 * Power[10, -9] * cUncertainty / Sqrt[3],
  uC4 -> 820 * Power[10, -9] * cUncertainty / Sqrt[3]
};

freq = Abs[poles /. values];
freq = freq / (2 * Pi) // N;

UncertaintyPropagation[f_] :=
  Abs[Sqrt[Total[Power[Dt[f, {{R1, R2, R3, R4, C1, C2, C3, C4}}] *
    {uR1, uR2, uR3, uR4, uC1, uC2, uC3, uC4}, 2]]] /. tolerances /. values];
propagated = UncertaintyPropagation /@ poles;

SetAccuracy[MapThread[PlusMinus[#1, #2] &, {freq, propagated}], 1]

Export[NotebookFileName[EvaluationNotebook[]] <> ".pdf", EvaluationNotebook[]];

Out[59]= {99. ± 21., 99. ± 21., 98. ± 27., 98. ± 27.}

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