

Student Contest 2023

Student Contest 2023 sponsored by the German Chapter of the IEEE EMC Society

Start date: 01.05.2023

End date: 30.11.2023

Eligible participants:

Students of Electrical Engineering and Information Technology or similar subjects with Bachelor degree or below

Contact:

Send the completed solution sheet via email to: Prof. Dr.-Ing. Matthias Hampe, m.hampe@ostfalia.de



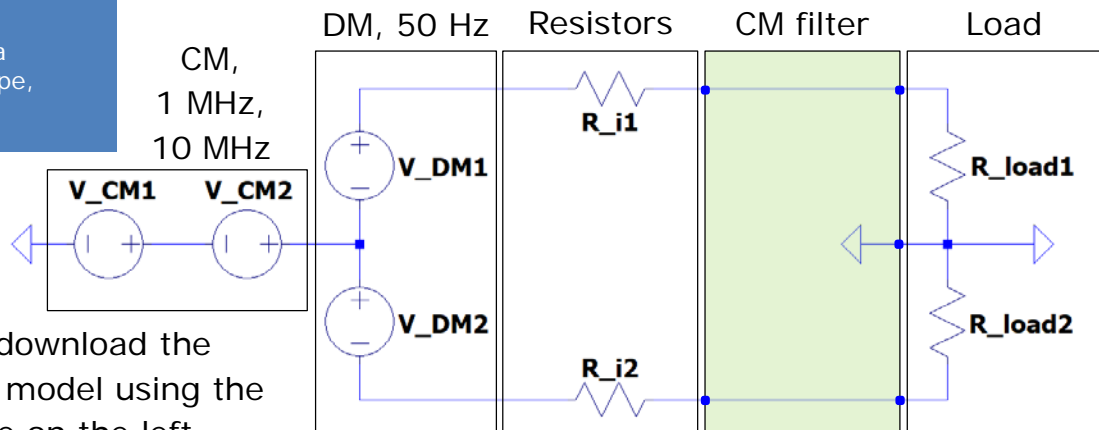
Please download the LTspice model using the QR code on the left.

Alternatively click here:

[Student Contest 2023](#)

Reduce the common mode in the circuit below!

The picture below shows a simple circuit where the desired differential mode (DM) is disturbed by an undesired common mode (CM). Improve the EMC of this circuit by using a CM filter.

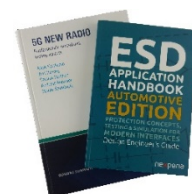


Reduce the common mode: task and rules.

1. Add one or more passive components at the location of the "CM filter" in such a way that the CM current into the "Load" becomes as small as possible.
2. The DM current into the "Load" should remain as unchanged as possible.
3. Describe all added passive components at least up to the frequency of 10 MHz with their relevant parasitic properties. The use of manufacturer models is permitted.
4. Estimate the cost and space requirements of all added passive components.
5. Main evaluation criterion is the change of CM and DM current into the "Load". In addition, the adequacy of the modeling is evaluated along with the cost and space requirements.

What is there to win, besides fame and honor.

- 1st price: Winner certificate and EMC book voucher 200 €, IEEE EMC Society Membership 1 year
- 2nd price: Certificate and EMC book voucher 100 €
- 3rd price: Certificate and EMC book voucher 50 €



Solution Sheet 2023

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Participants, up to 3 students:

Email address of contact person:

Amplitude of DM current: **A**

Amplitude of CM current: **mA**

Estimated costs: **€**

Estimated space: **mm³**

For what reasons did you insert which passive components?

What parasitic properties of the components are considered in your modeling?

Why is your solution particularly advantageous?

It is permissible to submit more detailed explanations in an additional PDF file.

Submit your LTspice simulation files along with your explanations.