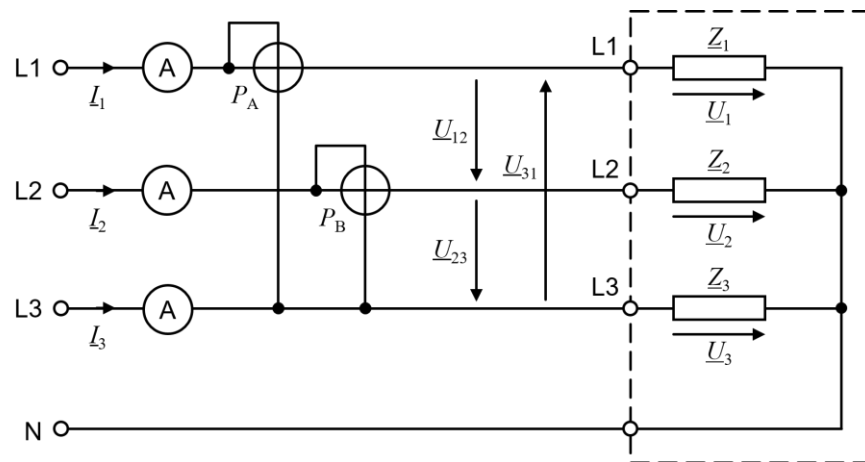


# Bachelor Thesis

## RLC Black Box for Laboratory Use

### Initial Situation and Motivation

To attractive the laboratory activities of the Institute of Electrical Systems, new and challenging exercises have to be added to the portfolio from time to time. One of these new exercises deals with an unknown three-phase load by means of a black box. The aim of the exercise is to determine resp. derive the elements (R, L, C) installed in a black box and the corresponding equivalent circuit diagram of the load by means of current, voltage and power measurements. The following figure shows the measurement circuit which should be used for this purpose, including the unknown three-phase load.



### Procedure/Methodology/Task

At first measurements with the already existing prototype of the three-phase load / black box should be carried out. Afterwards with the findings of the evaluation process of the measurement results the configuration of the three-phase load should be optimised (e.g. by using other components). Subsequently, a laboratory-compatible setup should be designed and manufactured, in which the knowledge gained with the prototype will be applied. In a further step, corresponding laboratory documents including instructions for the exercise should be created. Finally, an appropriate script for this laboratory exercise setup should be written. Proper documentation during all activities is also part of this thesis.

### Organisational matters

**Begin immediately**

### Contact

Dipl.-Ing. Daniel Herbst – daniel.herbst@tugraz.at

Dipl.-Ing. Martin Fürnschuß – martin.fuernschuss@tugraz.at