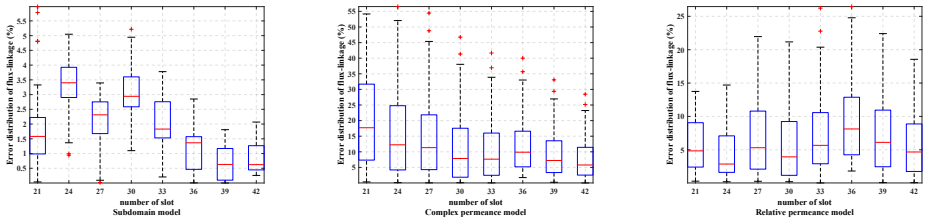
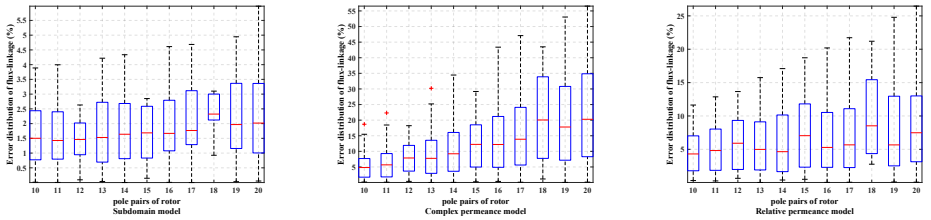
We have drawn the box plots which can illustrate more information of the error distribution changed with the key parameters in the next figures.

The error distribution as a function of the key parameters in the conventional PMSM is shown in the Figs. 1, 2 and 3. On each box, the central mark indicates the median, and the bottom and top edges of the box indicate the 25th and 75th percentiles, respectively. The black whiskers extend to the most extreme data points not considered outliers. The upper limitation of the box plot is the upper quartile. The lower limitation of the box plot is the lower quartile. The outliers are plotted individually using the red '+' symbol.



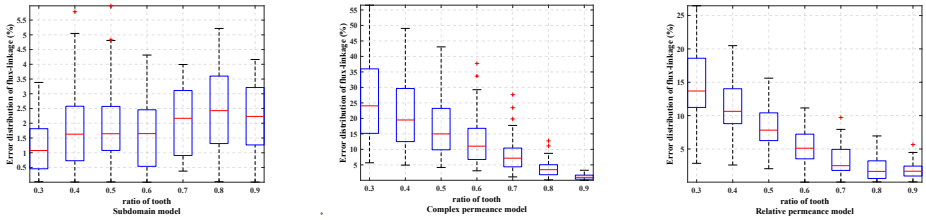
(a) Subdomain model (b) Complex permeance model (c) Relative permeance model

Figure 1: Error distribution as a function of the number of slots (Conventional PMSM).



(a) Subdomain model (b) Complex permeance model (c) Relative permeance model

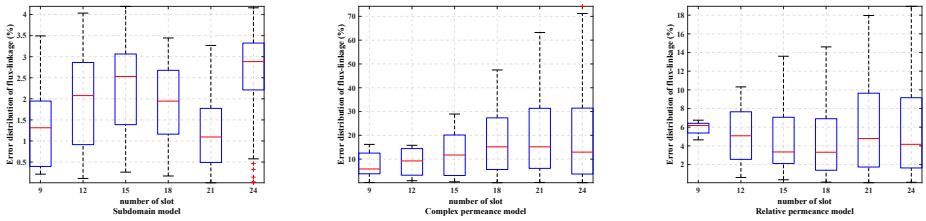
Figure 2: Error distribution as a function of the PM pole-pairs (Conventional PMSM).



(a) Subdomain model (b) Complex permeance model (c) Relative permeance model

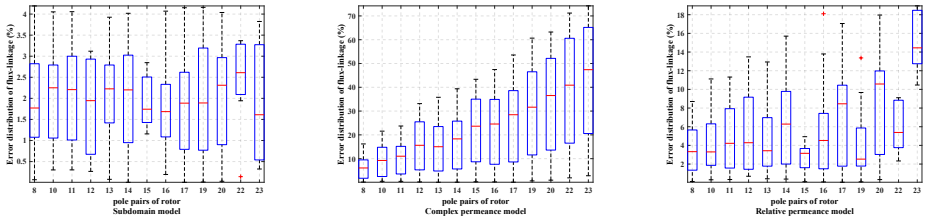
Figure 3: Error distribution as a function of the ratio of tooth (Conventional PMSM).

The error distribution changed with the key parameters in the Vernier PMSM is shown in the Figs. 4, 5 and 6.



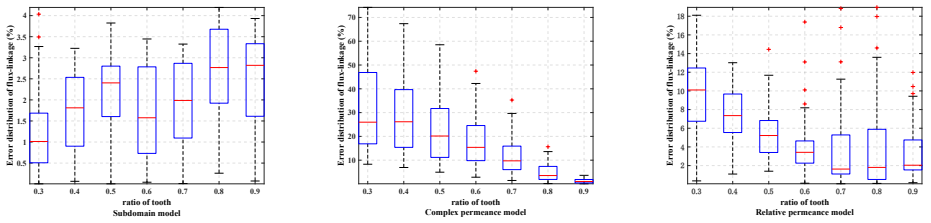
(a) Subdomain model (b) Complex permeance model (c) Relative permeance model

Figure 4: Error distribution as a function of the number of slots (Vernier PMSM).



(a) Subdomain model (b) Complex permeance model (c) Relative permeance model

Figure 5: Error distribution as a function of the with the PM pole-pairs (Vernier PMSM).



(a) Subdomain model (b) Complex permeance model (c) Relative permeance model

Figure 6: Error distribution as a function of the ratio of tooth (Vernier PMSM).

From these figures, we can find the relationship between the median error and error distribution with the key parameters in the different analytical models. The median error become bigger, the range of the error distribution become bigger. It means the precision of the analytical model become worse. We should try to avoid this situation, when we use the analytical model in the initial step.