Soft Switching Converters

Fabrice Frébel (fabrice.frebel@ieee.org)

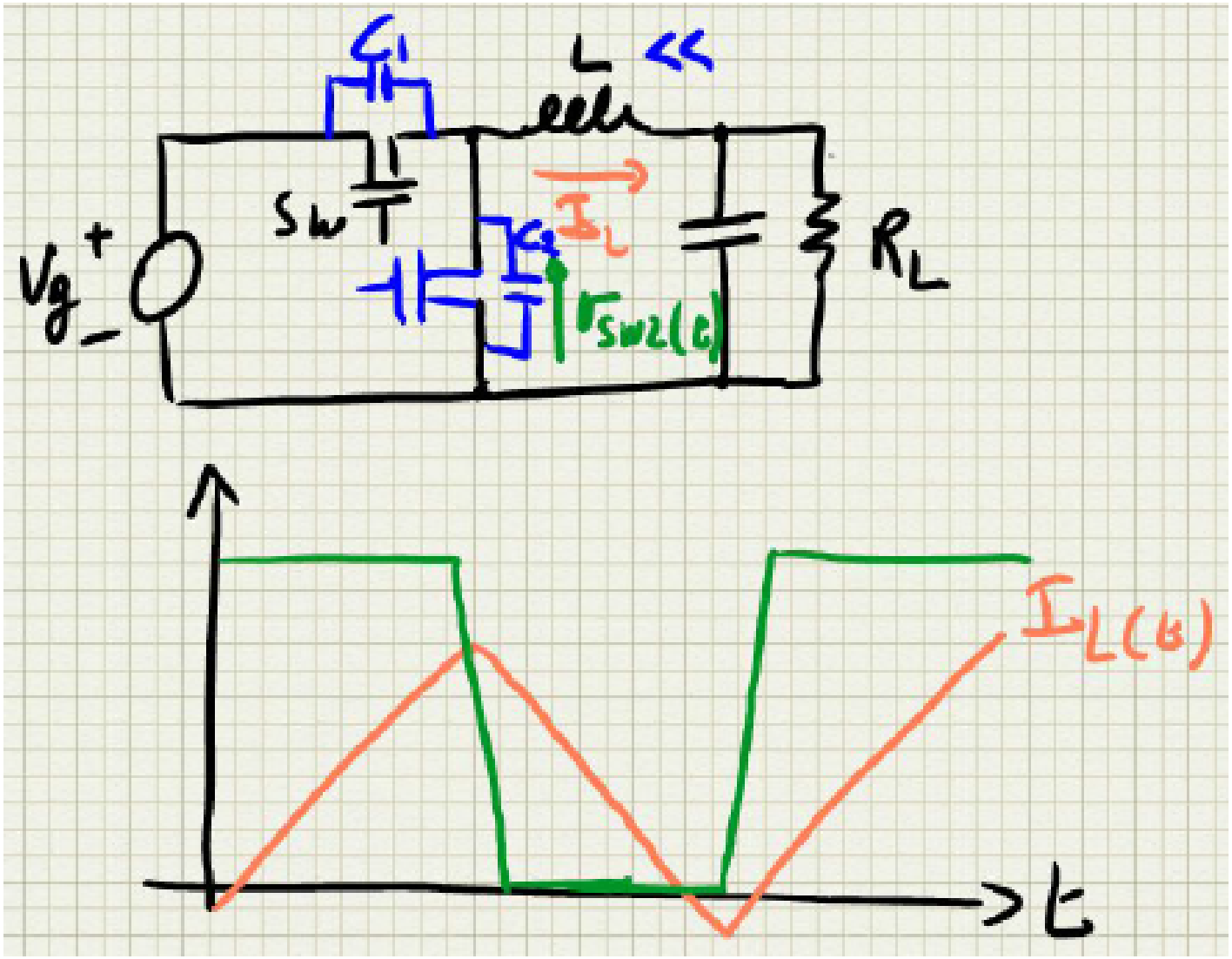
October 29^{th}, 2015

Content

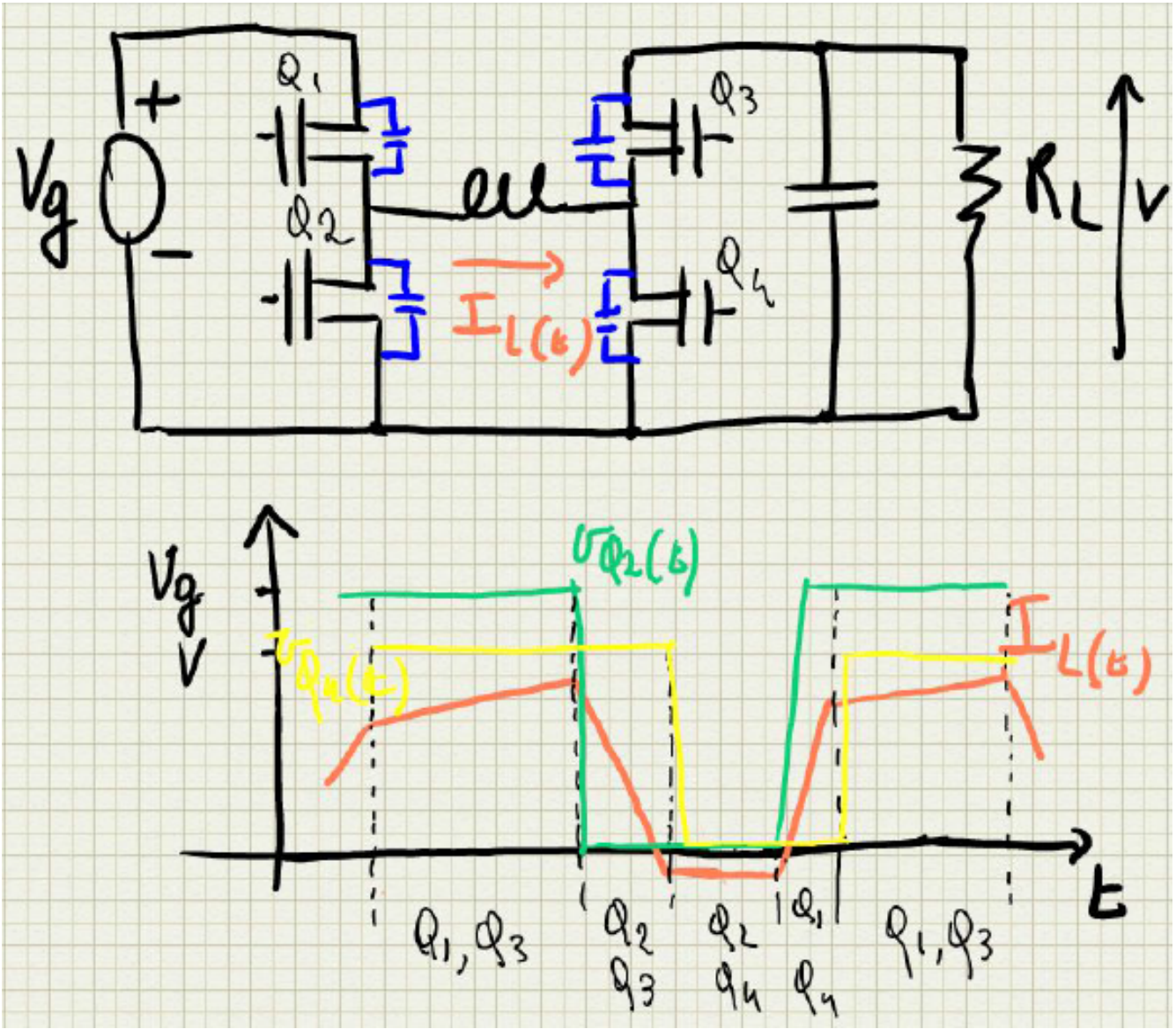
- Resonant converters (chapter 19, slides 1-23)
- Zero-Voltage Switching, Zero-Current Switching (chapter 19, slides 56-65)
- Quasi-resonant converters (introduction)
- Example of Zero-Voltage transition converters (chapter 19, slide 66 + next slides)

The goal of the presentation is to show that switching losses can be avoided in a lot of ways (existing and to be invented).

Modified buck (ZVT)



Bi-directional buck-boost (ZVT)



References

[1] R. W. Erickson and D. Maksimović, *Fundamentals of Power Electronics*.
Kluwer Academic Publishers, second ed., 2001.

[2] S. Waffler and J. Kolar, "A novel low-loss modulation strategy for high-power bidirectional buck bm + boost converters," *Power Electronics, IEEE Transactions on*, vol. 24, pp. 1589–1599, June 2009.