1. Objective

- AC-DC converter improvement
  - Efficiency
  - Decreasing Conduction loss

- Diode bridge → MOSFETs

Problem
- Generating reverse current

2. Background

- Good point
  - Easier use
  - Low cost

- Bad point
  - Constant Loss (conduction voltage 1V)

AC-CD converter usage

3. Proposed Circuit

Only normal switching → Not Boost
Because reverse current generate!

4. Simulation Result

- Efficiency
  - Conventional PFC: 94.2%
  - Half-Bridgeless PFC: 97.2%
  - Full-Bridgeless PFC: 99.6%

- As replaced by MOSFETs, efficiency is increased.

5. Relation Vlim

- Vlim smaller → generate reverse current

- Not Boost Voltage!

- Vlim larger → Nearly Half-Bridgeless operation

- Efficiency Down!

6. Conclusion

- Change module in Bridge
  - Diodes → MOSFETs

- Efficiency increases 5.0%

- Optimal Vlim choice
  - Causes efficiency down!

Reference

