CASS Chapter Highlights

Cheng-Ta Chiang, *CASS Tainan Chapter Chair*

CASS Tainan Chapter Hosts Distinguished Lecturer Gabriel A. Rincon-Mora

Abstract

Switched-inductor power supplies are pervasive in electronics. This is because they deliver a large fraction of the power they draw from the input source with an output voltage or current that is largely independent of the load. Keeping the output voltage or current steady this way is ultimately the responsibility of the feedback controller. This talk uses insight and intuition to show how pulse-width-modulated (PWM), hysteretic, and timed loops switch the inductor and offset the current or voltage they control. The presentation then shows how summing comparators work and how they can contract, offset, and compensate (for reduced offset) these control loops. With this background and understanding in hand, designing compact feedback controllers for switched-inductor power supplies is more straightforward.

The author is with the Department of Electrical Engineering, National Chia Yi University, Chiayi 600, Taiwan (e-mail: ctchiang@mail.ncyu.edu.tw).

Digital Object Identifier 10.1109/MCAS.2024.3506873
Date of current version: 7 February 2025

The Tainan Chapter of the IEEE Circuits and Systems Society (CASS) welcomed Distinguished Lecturer (DL) Gabriel A. Rincon-Mora, serviced for Georgia Institute of Technology, USA, to give two presentations. The first lecture took place 2:00 to 3:00 p.m. on 26 June 2024, at the National Cheng-Kuang University, Taiwan. Prof. Gabriel's talk, "Compact Control Loops for Switched-Inductor Power Supplies," attracted participants including 5 professors and 50 graduate students. Attendees had many questions for Prof. Gabriel and engaged in lively discussions after the talk.

Figure 1. CASS DL Gabriel A. Rincon-Mora and the attendees of the CASS Tainan seminar.

Figure 2. CASS DL Gabriel A. Rincon-Mora gave a lecture on Compact Control Loops for Switched-Inductor Power Supplies at an event hosted by the CASS Tainan Chapter.

Figure 3. CASS DL Gabriel A. Rincon-Mora and the attendees of the CASS Tainan seminar.

Figure 4. CASS DL Gabriel A. Rincon-Mora gave a lecture on Compact Control Loops for Switched-Inductor Power Supplies at an event hosted by the CASS Tainan Chapter.

Questions are mainly considered on circuit design of switched-inductor power IC such summing comparator, offset, and etc.

The second lecture took place 2:00 to 3:00 p.m. on 27 June 2024, at the National Chung-Hsing University, Taiwan. Prof. Gabriel's talk, "Compact Control Loops for Switched-Inductor Power Supplies," attracted participants including 8 professors and 40 graduate students. Attendees also had many questions for Prof. Gabriel and engaged in lively discussions after the talk. Questions are mainly considered on analog versus digital design of switched-inductor power IC.