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AD SEXAGINTA ANNOS PROSPERE CELEBRANDOS

Celebrating Six Decades of Achievement

DEDICATED TO

LEON O. CHUA

ON THE OCCASION OF HIS SIXTIETH BIRTHDAY

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Non-linear circuit theory: from private playground for academic researchers to innovative information processing circuits

On the occasion of Prof. Leon O. Chua's sixtieth birthday, we want with this title not only to focus attention on the central theme of his numerous publications, but also on his leading role in the research community.

There can be little doubt that his contributions have moved nonlinear circuit theory out of the catacombs into an important and well-established field in engineering with many interdisciplinary aspects, as is clear from his many publications and from the International Journal of Bifurcation and Chaos, of which he is the dynamic editor.

Against the background of sterile division between theoretical and practical researchers, he has been the creator of Cellular Neural Networks and Chua's Circuits, which are by construction realistic, simple and implementable. Yet from a theoretical point of view, they carry all the essential features of important classes of nonlinear circuits such as parallel analog information processing and chaotic circuits.

Such designs constitute genial new paradigms, which provide many challenging questions for the theoreticians, but at the same time are combining circuit implementability with a fascinating gamut of applications. In this way theory and practice meet and mutually strengthen each other, as it should be.

Based on a solid understanding and demystification of the

behaviour of nonlinear circuits, he developed the necessary mathematical tools for solving problems, leading to a whole new machinery applicable to a multitude of relevant engineering circuits.

In this way, we received numerous stimuli, thanks to his work, for n-double scroll circuits, the study of multiple equilibra in circuits, piecewise linear circuits, Lur'e stability theory, the colored branch theorem, and symmetry.

We wish you many prosperous and productive years for the future, full of fascinating and stimulating research!

Happy birthday!

Joos Vandewalle,
Johan Suykens,
Bart De Moor
Katholieke Universiteit Leuven