

Giancarlo Reali (born on 15 May 1950) is a Full Professor of Physics at the [Department of Electrical, Computer and Biomedical Engineering](#) of the University of Pavia (Italy). His main scientific interests have been in the field of laser engineering and applications. He was the founder in the mid-nineties of the [Laser Source Laboratory](#) of the University of Pavia and a member of it until the mid-2014.

Originally trained as an experimental particle physicist at the University of Pavia, he started his laser research activity in 1975, working on picosecond lasers and their application in laser-produced plasma experiments. Since the beginning of the 1980's he became involved in the design of high performance solid-state laser systems in their various working regimes. In particular, he had a role in the development of innovative unstable resonator configurations, and was the co-inventor of the self filtering unstable resonator (SFUR).

From the beginning 1984 to the beginning 1985 he was associated with the Center for Applied Quantum Electronics at the University of North Texas (Denton, Tx.), doing research in nonlinear optics and laser-induced material damage. Later on, his activity has continued in the field of lasers and their applications at the Engineering School of the University of Pavia, with an interesting and fruitful working experience in 1992 at Continuum (Santa Clara, Ca.), then a major North-American laser manufacturer.

Since the beginning 1990's, his main research interests have turned to diode-pumped solid-state laser engineering, including novel laser materials, continuous, pulse and ultrashort pulse laser operation, harmonic and parametric conversion, and more recently fiber lasers. All these topics have been the object of investigations and achievements of his group, leading the Laser Source Laboratory to a recognized international reputation.

Giancarlo Reali's activity has had an impact on the laser community, his main personal achievements being listed in the following:

- set-up of the first Italian picosecond laser system for laser-plasma interaction studies;
- operation of the first Italian mode-locked solid-state laser system utilizing an unstable optical resonator;
- co-invention and patenting of the self-filtering unstable resonator (SFUR);
- study and experimental demonstration of passive negative feedback mode-locking;
- first study and experimental demonstration of intra-pulse resolved spatial beam quality variation in high peak power pulsed laser systems;
- gain-shaping and beam quality in high power diode-pumped solid-state lasers;
- numerical modeling of laser systems;
- optimization of Fast-Hankel Transform algorithms for laser beam

- simulations;
- theoretical and numerical study of Raman fiber laser oscillators and amplifiers.

Being in an Engineering School, optics, electronics, and mechanical reliability and optimization of laser systems aimed at custom and industrial applications have always been sharply into his focus. As spin-off of these activities, with few former students of him, in 1998 he started [Bright Solutions, srl](#), a laser Consulting Agency which became a laser Company in 2004. Ever since then, Bright Solutions has considerably grown, by developing, manufacturing and commercializing innovative diode-pumped solid-state laser products, mainly devoted to the scientific and industrial market.

Paraphrasing his laser hero and example of professional integrity, Prof. A. E. Siegman (1931-2011), Giancarlo Reali feels that professionally he has been moderately successful and well rewarded, though what he has accomplished seems, in retrospect, to have come about more by his having been luckily in several right places at the right times, rather than by any deliberate process of his setting and then achieving goals.

Giancarlo Reali has authored or co-authored over 150 scientific papers, which have been published in international archival journals and conference proceedings. References and fuller description of his scientific production can be found in his [Google Scholar Profile](#).

During his academic career, he has been teaching almost all the basic and advanced courses in physics and photonics of the Engineering Faculty, he has been advisor or co-advisor of some forty students (during either their laurea or doctorate degrees), and has served the University, the Faculty and the Department communities by covering several representative positions.