

## MICROWAVE OFFICE SOFTWARE PROVES ENLIGHTENING FOR BRISTOL UNIVERSITY STUDENTS

One of the hallmarks of Microwave Office software is its unique ability to make the complex task of circuit design far more comprehensible and straightforward for users with varying levels of experience. Dr. Francesco Fornetti, Researcher and Lecturer at the University of Bristol's (UK) Center for Communications Research, and his students at Bristol University came to this conclusion early on when using Microwave Office software for graduate level Microwave/RF circuit design work.

While Dr. Fornetti's experience with Microwave Office software was limited prior to his start at Bristol University, several features with AWR's Microwave Office software immediately caught his eye as very appealing. One of these was the tuning tool within Microwave Office software that allows designers to experiment with various elements of the circuits they have created to determine the effect of modifications on performance.

### GOOD FORTUNE PLAYS A ROLE

Dr. Fornetti's work at Bristol University led him to explore the possibilities offered by gallium nitride (GaN) transistors and amplifiers. When he received samples from two different vendors, the installation and use of the models provided for one vendor were determined to be too difficult to install and too cumbersome to work with—even with the assistance of the other EDA software vendor's support staff. In a bit of serendipity, models for the GaN device samples from the other vendor were available only for Microwave Office software, so Dr. Fornetti's began to work with these.

As a result of the ease at which Dr. Fornetti was able to explore GaN devices within AWR's Microwave Office software, Bristol University obtained Microwave Office licenses for use by the departments' students and researchers within the RF & Microwave Engineering unit (part of the university's Masters' degree program). Part of this program's curriculum includes a simulation laboratory designed to familiarize students with matching networks and RF amplifiers—examining biasing, matching, and stabilization, as well as optimization and layout. These labs (or series of tasks) are to be completed in two 3-hour sessions with Dr. Fornetti and other instructors available for help if needed.

When students ran the labs using the software installed prior to AWR's deployment, the labs took much longer than the allotted six hours – forcing the students to completed the labs in their own free time. This had a ripple effect in that the students then became weary to experiment with their simulated circuits for fear of destroying the work that had taken them so much time to create.

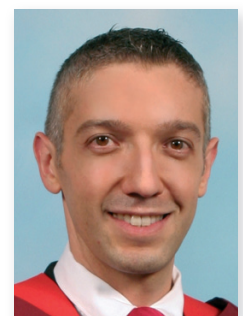


Course:  
Microwave/RF Circuit  
Design (Graduate-level)

Application:  
Matching Networks  
and GaN Amplifier  
Design

AWR Software:  
Microwave Office™

"Microwave & RF  
students complete  
graduate-level  
simulation tasks  
with time to spare,  
leaving them ample  
time to design, tune  
and optimize circuit  
performance."



Dr. Francesco Fornetti  
MEng PhD  
University of Bristol

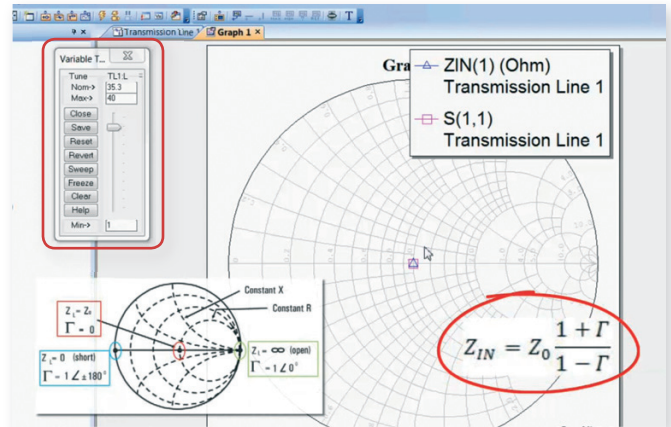
"I rewrote the material for the very same laboratory exercise using Microwave Office," says Dr. Fornetti "and added additional bits that identified and demonstrated the tuning tool. We ran this lab in the next academic year and most students needed only the first 3-hour session to complete the exact same exercise." What Dr. Fornetti found even more interesting was that the students were not the least bit hesitant to work with the tuning tool to tweak their circuits.

"They used the tuner extensively to explore the effects of various parameters on the simulations results," says Dr. Fornetti, "which led them to a much more detailed understanding of the exercise and the concepts it was designed to illustrate. The resulting lab reports clearly reflected this and showed a better grasp of the issues and trade-offs of amplifier design than was demonstrated in previous year's reports."

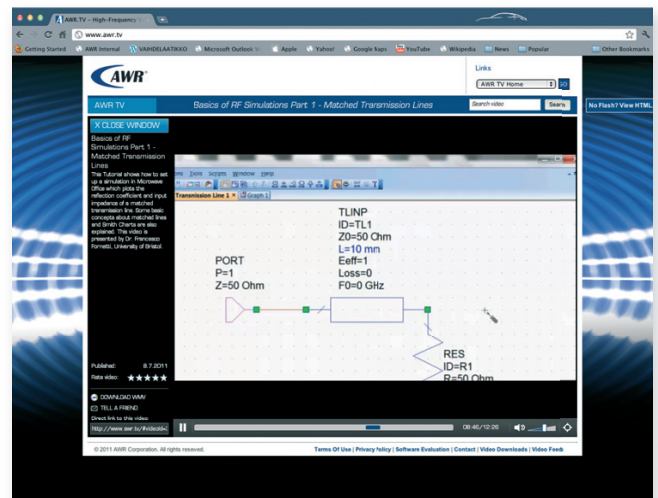
## SPREADING THE WORD

In January 2010, Dr. Fornetti was awarded a grant by the Worldwide University Network (WUN) to teach for three months at the University of Sydney in Australia. The goal of WUN's exchange program is to create research links between academic institutions as well as allow researchers to share their experiences and foster a greater environment of collaboration.

At the University of Sydney, Dr. Fornetti contributed to the RF engineering and antenna courses taught by Professor Godfrey Lucas. "After securing AWR university software licenses for Professor Lucas's use at the University of Sydney" says Dr. Fornetti, "I provided Professor Lucas's students with voiced-over videos that showed simulations similar to those they had been taught in their lectures. The enthusiasm I saw was similar to what I experienced back home." Using professional video editing software, Dr. Fornetti has now enhanced the videos, complete with lecture notes, and they are featured on [www.awr.tv](http://www.awr.tv) – with more to come.



The unique tuning tool in Microwave Office software makes it easy to optimize circuit performance.



View the "Basics of RF Simulation" and "Basics of DC Simulation" video series produced by Dr. Francesco Fornetti at AWR.TV.



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