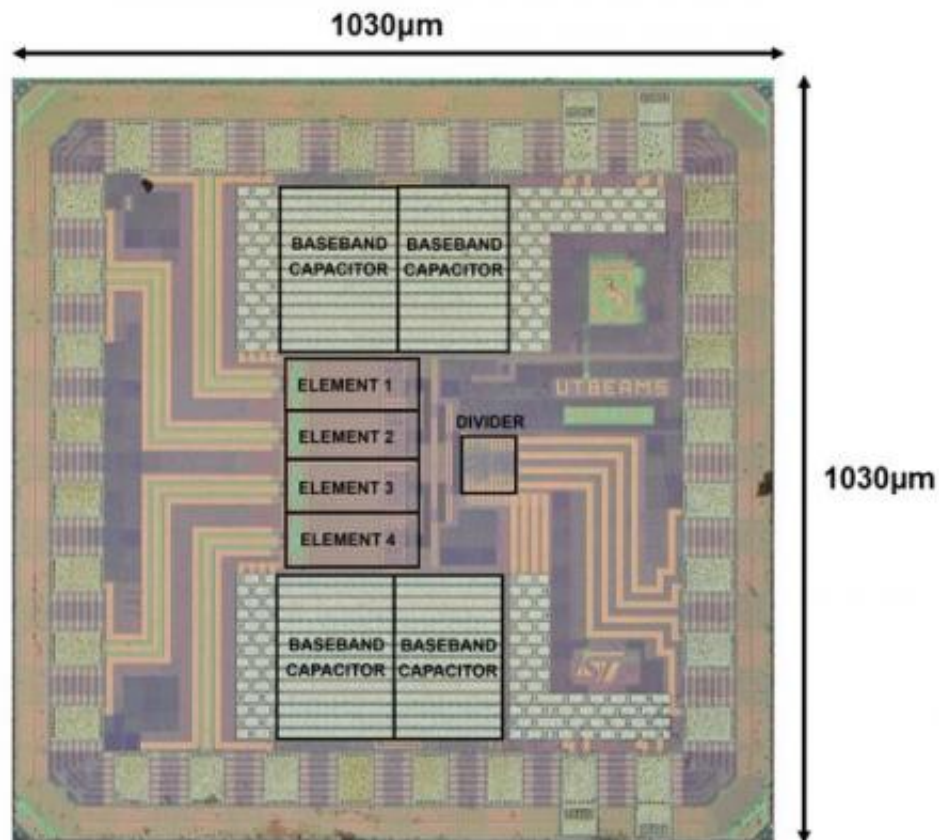


Researchers develop antenna capable of remedying malfunction

May 23 2014, by Kim Bekmann



Researchers from the University of Twente have developed an antenna that can put an end to a malfunction. Developing such an antenna has

been possible for some time, but its production was too expensive. Postgraduate student Michiel Soer has developed smart circuits which mean this antenna can now be manufactured extremely economically and cheaply.

There is already a shortage of transmission frequencies and this shortage will keep on growing. Because the [frequency spectrum](#) is becoming so full, several signals sometimes have to use a single frequency. This is how malfunction occurs; various devices transmit signals at the same location, at the same time and on the same frequency. This results in what you might call collisions between information, and wireless internet slows down. Bram Nauta is a professor in Integrated Circuit Design at the University of Twente: "At home we currently use one frequency for our laptop, router and telephone, etc. But in a few years' time, our homes will have countless appliances that make use of frequencies. For instance, your coffee-maker will know you are about to arrive home and will start making you a cup of coffee. To do this, the coffee-maker will need a [frequency](#). The same applies to masses of appliances. Our [antenna](#) offers a solution for the increasing shortage of frequencies."

Technically, the ability to make an antenna to deal with malfunctions already existed for some time, but its production was really expensive. Michiel Soer developed smart circuits on a chip, and the antenna can now be manufactured extremely economically and cheaply. His antenna works with four different receivers instead of one. Nauta: "The malfunctioning signal is taken care of because the circuits on our chip process the incoming signals mathematically. The system can be compared to road traffic. The cars are little packages containing information. At the moment, 'traffic' is regulated with [traffic lights](#) and 'cars' have to wait for one another. The antenna that Michiel has designed has replaced the traffic lights with viaducts. The cars can carry on travelling, without bumping into one another or having to wait. This will make internet faster."

In principle, the antenna is ready for use. Bram Nauta: "The product will probably be available on the market within two years." The antenna could be used in, for example, laptops, tablets and routers. Eventually it will also be possible to use the antenna for other appliances, such as mobile telephones. Michiel Soer's system was published in a paper during a well-known international chip-conference. The research is part of the [STARS project](#) in which the University of Twente is a participant, alongside NXP, Thales and TNO. Michiel Soer performs research into reconfigurable phased arrays as a postgraduate student in the Integrated Circuit Design department of the EWI faculty. The research is carried out within the CTIT Institute.

Provided by University of Twente

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