

Comment

Comments on the Brief Communication “Security Considerations in Blinded Exposure Experiments Using Electromagnetic Waves” by Christian Wolf

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Wolf [2008] has correctly predicted that his article might be viewed as a “Layman’s Guide to Scientific Fraud.” His study has also correctly ascertained that well-designed technical systems are deterministic and result in reproducible outputs.

The Agilent 34970A device is used as a digital and analog interface to the PC via General Purpose Interface Bus (GPIB) and serves two purposes: (1) acquiring the analog and digital signals from the system sensors and (2) controlling different parts of the exposure system equipment including the RF switch. The device has several windows to display the state and values of the different interface cards. As pointed out by Professor Wolf, the state of the switch that activates the RF power in one of the two waveguides can be determined by viewing the third digit from the left on the display window (only valid for this particular software version) after repeated activation and switching the display of the device to a particular window and comparing the displayed digits with those of previous experiments. Instead of conducting these experiments to “clarify the situation,” the author could have asked the IT’IS Foundation for technical information about the device. There are actually numerous, relatively simple ways to determine which waveguide is active and which is not (sham exposure) depending on the user’s technical knowledge and determination to deceive. We will refrain from describing these different methods since it is not our intention to publish an “Expert’s Guide to Scientific Fraud.”

In view of the fact that any encoded system, including military equipment, can be cracked, our intention was and is to provide the best means for conducting responsible blinded exposures. Blinding can prevent or minimize experimental bias or non-intentional fraud, which historically has always been the leading risk for obtaining tainted findings. The blinding of our exposure systems is designed to support

research laboratories in their quest to promote Good Laboratory Practice (GLP) measures and principles. More importantly, laboratories must establish a scientific laboratory culture aimed at fostering honesty and scientific integrity.

As a consequence of this article, we will modify the software for all of our different systems to prevent the exposure conditions from being viewed based on the information provided in Wolf [2008]. The system, however, will still not be foolproof to anyone who lacks scientific integrity and knowingly perpetrates fraud.

In conclusion, all exposure systems developed by the IT’IS Foundation [Huber et al., 2003; Kuster et al., 2004; Schuderer et al., 2004a,b,c; Kainz et al., 2006; Regel et al., 2006] are designed to provide the best means for conducting responsible blinded experimental procedures. They are not nor can they be designed to prevent intentional fraud, and further fortifying the system security would hinder the flexibility of biological experiments and significantly increase the system costs without granting total security. It would be very naïve to assume that Good Laboratory Practice and scientific integrity can be replaced by coded controls on laboratory equipment.

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