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Power dependence of supercontinuum noise in uniform and tapered PCFs: erratum

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Abstract: An error was made in the calculation of the relative intensity noise (RIN) because of an incorrectly specified value of the photodetector DC transimpedance gain.

OCIS codes: (060.4370) Nonlinear optics, fibers; (060.5295) Photonic crystal fibers; (320.6629) Supercontinuum generation.

References and links

1. U. Møller, S. T. Sørensen, C. Jakobsen, J. Johansen, P. M. Moselund, C. L. Thomsen, and O. Bang, "Power dependence of supercontinuum noise in uniform and tapered PCFs," Opt. Express **20**, 2851–2857 (2012).
2. U. Møller, S. T. Sørensen, C. Larsen, P. M. Moselund, C. Jakobsen, J. Johansen, C. L. Thomsen, and O. Bang, "Optimum PCF tapers for blue-enhanced supercontinuum sources," Opt. Fiber Technol. (2012), (article in press) http://dx.doi.org/10.1016/j.yofte.2012.07.010.

The DC transimpedance gain of the New Focus photodetectors used in [1] was mistakenly specified by the manufacturer to be $G_{DC} = 1\,V/mA$. The correct DC transimpedance gain is $G_{DC} = 10\,V/mA$ for an input impedance of 50 Ω and $G_{DC} = 20\,V/mA$ for an infinite input impedance. The AC transimpedance gain for a 50 Ω input impedance is as specified $G_{DC} = 40\,V/mA$. We have now measured these values and they have been confirmed by the manufacturer.

Since the relative intensity noise (RIN) is proportional to $[G_{DC}/G_{AC}]^2$ the RIN is increased by a factor of 400 corresponding to 26 dB. Below is shown Figs. 3–5 from [1] with the corrected RIN values. The corrected RIN measurements can also be found in [2].

The authors regret the error, but emphasize that it does not affect any of the conclusions presented in [1].

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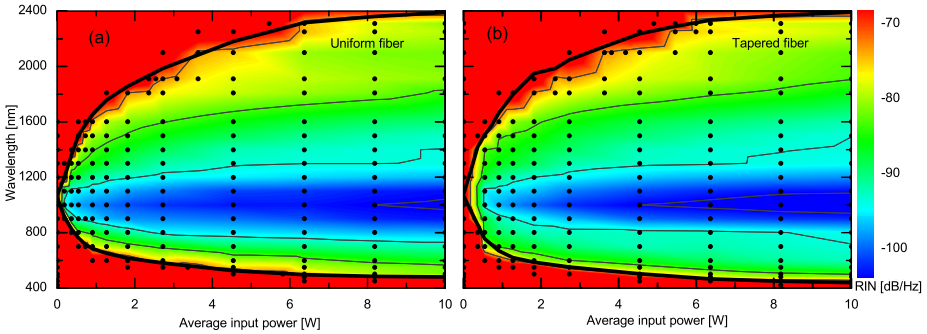

Fig. 3. RIN vs. input power and wavelength in (a) the uniform fiber and (b) the tapered fiber. The thick black line shows the spectral edges. The dots show the measurement points.

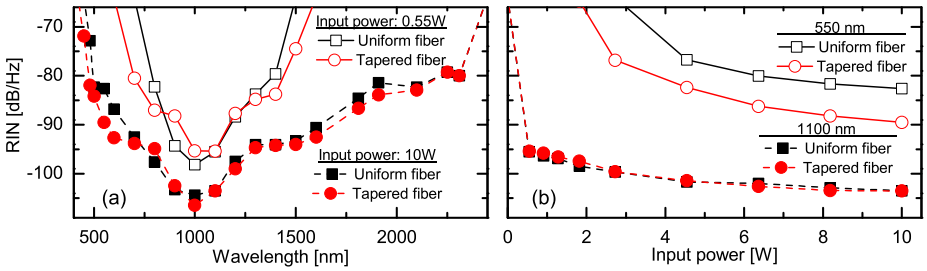

Fig. 4. RIN of the uniform (black squares) and the tapered fiber (red circles) (a) vs. wavelength at fixed input power of 0.55 W (open symbols) and 10 W (solid symbols) and (b) vs. input power at fixed wavelength of 550 nm (open symbols) and 1100 nm (solid symbols).

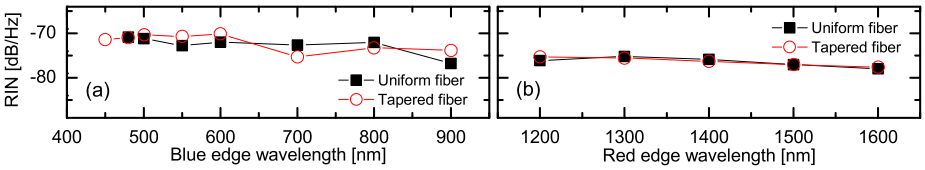

Fig. 5. RIN at the spectral (a) blue and (b) red edge of the uniform and tapered fiber, respectively, as a function of wavelength.

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