Data underlying the results presented in
The Airy fibre: an optical fibre that guides light diffracted by a circular aperture by I. Gris-Sánchez et al
as stored in the repository at *http://doi.org/10.15125/BATH-00173*

These data files were prepared on a PC running Microsoft Windows 8.1.

t1_design_constants.txt (list of (N, i, $P_{N,i}$, $C_{N,i}$, $A_{N,i}$) in text form)
constants used to define the mode profile in Eqs. 7 and 8 for N from 0 to 8, presented in Table 1 for $N \leq 3$

02a_exact_profile.txt (list of (R, $\nu(R)$) in text form)
normalised index profile calculated using Eq. 3 and the exact Airy pattern of Eq. 5, presented in Fig. 2(a)

02b_approx_profile.txt (list of (R, $\nu(R)$) in text form)
normalised index profile calculated using Eq. 3 and the approximate Airy mode of Eq. 8, presented in Figs. 2(b) and 5(b)

03a_basis functions.txt (list of (R, $f_{1,1}(R)$, $f_{1,2}(R)$, $f_{1,3}(R)$, $f_{1,4}(R)$) in text form)
basis functions $f_{N,i}(R)$ defined by Eq. 7, presented in Fig. 3(a)

03b_airy_mode.txt (list of (R, $\psi(R)$) in text form)
Airy mode from Eq. 8, presented as the dashed black curve in Fig. 3(b)

04a_truncated_cladding_index.txt (list of (R_c, ν_c) in text form)
Normalised index ν_c of uniform cladding required if the profile is truncated at R_c, presented in Fig. 4(a)

04b_truncated_modes.txt (list of (R, $\psi(R)$, $\psi(R)$, $\psi(R)$, $\psi(R)$) in text form)
Airy modes untruncated and truncated at R_c = 3.05, 3.2 and 3.35 respectively, presented in Fig. 4(b)

05a_truncated_mode.txt (list of (R, $\psi(R)$) in text form)
Airy mode truncated at R_c = 3.2, presented in Fig. 5(a)

05b_truncated_profile.txt (list of (R, $\nu(R)$) in text form)
normalised index profile for the truncated Airy mode, presented in Fig. 5(b) and Fig. 6

06_other_modes.txt (list of (R, $\psi_{0,1}(R)$, $\psi_{1,1}(R)$, $\psi_{2,1}(R)$, $\psi_{0,2}(R)$, $\psi_{0,3}(R)$, $\psi_{0,4}(R)$) in text form)
radial distributions of $LP_{l,m}$ modes $\psi_{l,m}$ of Airy fibre, all but $LP_{0,3}$ presented in Fig. 6 with $\sin(l\theta)$ angular variation

07a_other_wavelengths.txt (list of (R, $\psi(R)$, $\psi(R)$, $\psi(R)$) in text form)
Airy modes at wavelengths λ/λ_0 = 0.8, 1.0 and 1.2 (left to right along each data row), presented in Fig. 7(a)

07ai_overlap.txt (list of (λ/λ_0, Ω) in text form)
overlap of Airy mode with Airy pattern versus wavelength, presented in Fig. 7(a) inset

07b_dispersions.txt (list of (λ_0/λ, then 12 values of modal ν) in text form)
normalised effective indices ν versus frequency for the first 12 l = 0 modes, presented in Fig. 7(b)

07bi_anticrossing.txt (list of (R, $\psi_1(R)$, $\psi_2(R)$, $\psi_3(R)$) in text form)
modes of the Airy fibre: LP_{04} at λ_0/λ, = 1.3, LP_{04} at λ_0/λ, = 1.9 and LP_{05} at λ_0/λ, = 1.9 (left to right along each data row), presented in Fig. 7(b) insets

08_approx_profile_adjusted.txt (list of (r/a, Δn) in text form)
index profile (relative to undoped silica) of the final design adjusted as described in section 3A, presented as the red curve in Fig 8(a)

(the measured refractive index profile data in Fig. 8 are proprietary to Draka Comteq Fiber BV)

09a_micrograph.JPG (jpg image)
micrograph image of endface of Airy fibre, presented as Fig. 9(a)

09b_micrograph_profile.txt (list of (pixel intensity values) in text form)
pixel values across the cross-section of a micrograph of the fibre endface, presented as Fig. 9(b)

10a_airy_saturated.png (png image)
near-field image of light in the Airy mode, presented as Fig. 10(a)

10a_airy_unsaturated.png (png image)
near-field image of light in the Airy mode with higher ND filtering, presented as Fig. 10(a) inset

10a_airy_dark.png (png image)
dark image, which was subtracted from Airy mode images to produce Fig. 10(a) and hence the data for Fig. 10(b), and to identify stuck pixels

10b_airy_mode_field.xlsx (2D array of pixel values in an Excel file)
field distribution in the Airy mode calculated from the near-field images, with the saturated image data scaled down to compensate for differential ND filtering, presented as Fig. 10(b)

11_other_left.tif (tiff image)
near-field image of light in other modes, presented as left panel of Fig. 11

11_other_middle.tif (tiff image)
near-field image of light in other modes, presented as middle panel of Fig. 11

11_other_right.tif (tiff image)
near-field image of light in other modes, presented as right panel of Fig. 11

12a_far_field_ideal.txt (list of (k, $\Psi(k)$) in text form)
radial Fourier transform Ψ for the ideal untruncated Airy pattern, presented as Fig. 12(b)

12b_far_field_truncated.txt (list of (k, $\Psi(k)$) in text form)
radial Fourier transform Ψ for the Airy pattern truncated to the first three rings, presented as Fig. 12(b)

12c_far_field_expt.png (png image)
far field image of light emerging from Airy fibre, presented as Fig. 12(c)