

README


For Light coupling to photonic integrated circuits using optimized lensed fibers

FIGURE 2


- Folder: `./Figure2`

Code&Data


1. `Plot_FiberOutput.m`

- **Description:**  Code for plotting the transmission from a lensed fiber ($D = 2\ \mu\text{m}$) to the air on the x-y plane and the beam power distribution along the y axis at the focus.
- **Input:** `FiberOutput_D%dum_xy.mat`, where %d can be 2, 3, 4, 5, or 6.
- **Usage:** Used for plotting Figure 2b and 2c.


2. `FiberOutput_D%dum_xy.mat`

- **Description:**  Data for the power distribution of the beam on the x-y plane from the lensed fiber with $D = \%d$ (It can be 2, 3, 4, 5, or 6 μm).
- **Generated by:** 3D FDTD simulation.
- **Usage:** Used for plotting Figure 2b and 2c.

3. `Plot_Robust_x.m`

- **Description:**  Code for plotting the η_{ft} distribution of different D values and tapers with varying w .
- **Input:** `Eta_ft_xyz.mat` and D .
- **Usage:** Used for plotting Figure 2d.

4. `Eta_ft_xyz.mat`

- **Description:**  Data for the misalignment η along the x/y/z axis.
- **Parameters:**
 - (D, w, h, α) : in the same meaning as the manuscript;
 - pol : polarization;
 - pos : the optimal coupling position;
 - $(x_aligns, y_aligns, z_aligns)$: misalignment along each axis;
 - (eta_x, eta_y, eta_z) : calculated as η_{prim} for each misalignment;
 - (T_f, T_t) : in the same meaning as $(T_f^{\text{forward}}, T_t^{\text{backward}})$.

- **Generated by:** The methods described in Appendix D.
- **Usage:** Used for plotting Figure 2d.

Notes

1. Run the `.m` scripts in MATLAB with the corresponding `.mat` files.
2. The MATLAB version is suggested to be higher than R2022b.