WHAT IS CLAIMED IS:

1. A system comprising:

an optical transmitter assembly comprising:

a modulator; and

an optical transmitter coupled to the modulator and configured to emit an optical beam that the modulator is configured to modulate with data, the optical transmitter thereby being configured to emit the optical beam carrying the data and without artificial confinement for receipt by an optical receiver configured to detect and recover the data from the optical beam; and

an optical receiver assembly comprising:

a demodulator; and

the optical receiver coupled to the demodulator and configured to detect the optical beam that carries data the demodulator is configured to recover, the optical receiver being configured to detect the optical beam emitted without artificial confinement from the optical transmitter configured to emit the optical beam modulated with the data,

wherein the optical transmitter is configured to emit the optical beam with a divergence angle greater than 0.1 degrees, and with a photonic efficiency of less than 0.05%, and the optical receiver is configured to detect the optical beam emitted with the divergence angle greater than 0.1 degrees, and with the photonic efficiency of less than 0.05%, the photonic efficiency relating a number of photons of the optical beam detectable by the optical receiver, to a number of photons of the optical beam emitted by the optical transmitter.

2. The system of Claim 1, wherein the optical transmitter being configured to emit the optical beam includes being configured to emit an incident beam directed at a reflector to produce a reflected beam by reflection of the incident beam, the optical transmitter being configured to emit the incident beam for receipt of the reflected beam by the optical receiver.

3. The system of Claim 1, wherein the optical transmitter includes an array of emitters configured to emit the optical beam, the array having a size larger than a spot size of the optical beam at the optical transmitter.

4. The system of Claim 3, wherein the optical transmitter further includes an optic through which the array of emitters is configured to emit the optical beam, the emitters of the array

being configured to emit respective collimated beams but with different angles due to a spatial extent of the array, the array thereby being configured to produce the optical beam composed of the respective collimated beams and whose divergence angle is set by the size of the array and focal length of the optic.

5. The system of Claim 3, wherein the optical transmitter further includes an optic through which the array of emitters is configured to emit the optical beam, the array being situated away from a focus of the optic, the emitters of the array being configured to emit respective diverging beams, the array thereby being configured to produce the optical beam composed of the respective diverging beams and whose divergence angle is set by the size of the array and a degree of de-focus due to the situation of the array away from the focus of the optic.

6. The system of Claim 3, wherein the optical transmitter is configured to perform multiplexing to serve multiple optical receivers.

7. An apparatus comprising:

a modulator; and

an optical transmitter coupled to the modulator and configured to emit an optical beam that the modulator is configured to modulate with data, the optical transmitter thereby being configured to emit the optical beam carrying the data and without artificial confinement for receipt by an optical receiver configured to detect and recover the data from the optical beam,

wherein the optical transmitter is configured to emit the optical beam with a divergence angle greater than 0.1 degrees, and with a photonic efficiency of less than 0.05%, the photonic efficiency relating a number of photons of the optical beam detectable by the optical receiver, to a number of photons of the optical beam emitted by the optical transmitter, and

wherein the optical transmitter is configured to emit the optical beam with an adjustable focus or astigmatism, the adjustable focus enabling adjustment of a diameter of the optical beam at a given distance from the optical transmitter, and the astigmatism causing the optical beam to have different vertical and horizontal divergences.

8. An apparatus comprising:

a modulator; and

an optical transmitter coupled to the modulator and configured to emit an optical beam that the modulator is configured to modulate with data, the optical transmitter thereby being configured

to emit the optical beam carrying the data and without artificial confinement for receipt by an optical receiver configured to detect and recover the data from the optical beam,

wherein the optical transmitter is configured to emit the optical beam with a divergence angle greater than 0.1 degrees, and with a photonic efficiency of less than 0.05%, the photonic efficiency relating a number of photons of the optical beam detectable by the optical receiver, to a number of photons of the optical beam emitted by the optical transmitter, and

wherein the apparatus is further configured to transmit a heartbeat signal for orientation of the optical transmitter and optical receiver, the heartbeat signal being modulated to carry or indicate a location of the optical transmitter, or a signal to cause the optical receiver to return its location or an indication of its location to the optical transmitter.

9. The system of Claim 1, wherein the optical receiver is configured to detect the optical beam at least in some instances in which the optical receiver does not have a line-of-sight to the optical transmitter.

10. The system of Claim 1 comprising an array of optical receivers including the optical receiver, or the optical receiver includes an array of detectors configured to detect the optical beam, and

wherein optical receivers of the array of optical receivers or detectors of the array of detectors are configured to selectively activate and deactivate based on their orientation with respect to the optical transmitter.

11. The system of Claim 1, wherein the optical beam includes an incident beam, and a reflected beam produced by reflection of the incident beam, the optical receiver in at least one instance being configured to preferentially detect the reflected beam, and avoid direct detection of the incident beam.

12. The system of Claim 1, wherein the optical receiver includes an array of detectors configured to detect the optical beam, the array having a size larger than a spot size of the optical beam at the optical transmitter.

13. The system of Claim 12, wherein the optical beam is spatially multiplexed to serve multiple optical receivers, the array of detectors being arranged in a pattern of detectors that corresponds to a pattern of emitters of the optical transmitter that are independently modulated.

14. The system of Claim 1 further comprising a wavelength-specific or wavelength-tunable filter to enable the optical receiver to detect the optical beam that is spectral multiplexed to serve multiple optical receivers.

15. The system of Claim 1, wherein the optical receiver is configured to detect the optical beam with an adjustable focus to facilitate a match of the optical receiver to characteristics of the optical beam, the adjustable focus in at least one instance including focus of the optical receiver at some intermediate point between the optical transmitter and optical receiver.

16. The system of Claim 1 further configured to receive a heartbeat signal for orientation of the optical receiver and optical transmitter, the heartbeat signal being modulated to carry or indicate a location of the optical transmitter, or a signal to cause the optical receiver to return its location or an indication of its location to the optical transmitter.

17. The system of Claim 1, wherein the optical receiver includes a camera configured to capture a portion of the optical beam, and electronics with which the camera is configured to communicate to drive coarse or fine steering based on the captured portion of the optical beam to at least partially orient the optical receiver and optical transmitter.

18. The system of Claim 1, wherein the optical receiver includes a plurality of photodiodes positioned around a periphery of and that are shadowed by a limiting aperture of the optical receiver, the photodiodes being configured to detect relative powers of the optical beam, the optical receiver further including electronics with which the photodiodes are configured to communicate to drive coarse or fine steering based on the relative powers of the optical beam to at least partially orient the optical receiver and optical transmitter.

19. A method comprising:

modulating an optical beam with data;

emitting by an optical transmitter, the optical beam carrying the data and without artificial confinement for receipt by an optical receiver configured to detect and recover the data from the optical beam;

detecting by the optical receiver, the optical beam emitted without artificial confinement from the optical transmitter configured to emit the optical beam modulated with data; and

recovering the data from the optical beam so detected,

wherein the optical beam is emitted with a divergence angle greater than 0.1 degrees, and with a photonic efficiency of less than 0.05%, and the optical beam detected by the optical receiver is emitted with the divergence angle greater than 0.1 degrees, and with the photonic efficiency of less than 0.05%, the photonic efficiency relating a number of photons of the optical beam detectable by the optical receiver, to a number of photons of the optical beam emitted by the optical transmitter.

20. The method of Claim 19, wherein emitting the optical beam includes emitting an incident beam directed at a reflector to produce a reflected beam by reflection of the incident beam, the incident beam being emitted for receipt of the reflected beam by the optical receiver.

21. The method of Claim 19, wherein the optical beam is emitted by an array of emitters of the optical transmitter, the array having a size larger than a spot size of the optical beam at the optical transmitter.

22. The method of Claim 21, wherein the optical beam is emitted by the array of emitters through an optic, the emitters of the array emitting respective collimated beams but with different angles due to a spatial extent of the array, the array thereby producing the optical beam composed of the respective collimated beams and whose divergence angle is set by the size of the array and focal length of the optic.

23. The method of Claim 21, wherein the optical beam is emitted by the array of emitters through an optic, the array being situated away from a focus of the optic, the emitters of the array emitting respective diverging beams, the array thereby producing the optical beam composed of the respective diverging beams and whose divergence angle is set by the size of the array and a degree of de-focus due to the situation of the array away from the focus of the optic.

24. The method of Claim 21 further comprising:

performing multiplexing to serve multiple optical receivers.

25. A method comprising:

modulating an optical beam with data; and

emitting by an optical transmitter, the optical beam carrying the data and without artificial

confinement for receipt by an optical receiver configured to detect and recover the data from the optical beam,

wherein the optical beam is emitted with a divergence angle greater than 0.1 degrees, and with a photonic efficiency of less than 0.05%, the photonic efficiency relating a number of photons of the optical beam detectable by the optical receiver, to a number of photons of the optical beam emitted by the optical transmitter, and

wherein the optical beam is emitted with an adjustable focus or astigmatism, the adjustable focus enabling adjustment of a diameter of the optical beam at a given distance from the optical transmitter, and the astigmatism causing the optical beam to have different vertical and horizontal divergences.

26. A method comprising:

modulating an optical beam with data; and

emitting by an optical transmitter, the optical beam carrying the data and without artificial confinement for receipt by an optical receiver configured to detect and recover the data from the optical beam,

wherein the optical beam is emitted with a divergence angle greater than 0.1 degrees, and with a photonic efficiency of less than 0.05%, the photonic efficiency relating a number of photons of the optical beam detectable by the optical receiver, to a number of photons of the optical beam emitted by the optical transmitter, and

wherein the method further comprises transmitting a heartbeat signal for orientation of the optical transmitter and optical receiver, the heartbeat signal being modulated to carry or indicate a location of the optical transmitter, or a signal to cause the optical receiver to return its location or an indication of its location to the optical transmitter.