CLAIMS

1. A light detection and ranging (LIDAR) device comprising:

a light source that emits light;

a transmit lens that directs the emitted light to define a field-of-view (FOV) of the LIDAR device, wherein the emitted light illuminates a region of an environment within the FOV defined by the transmit lens;

a receive lens that receives light from the environment, wherein the receive lens focuses light propagating toward the LIDAR device from the illuminated region of the environment along a predefined optical path;

an array of light detectors positioned along the predefined optical path to intercept and detect the light propagating toward the LIDAR device from the illuminated region of the environment focused by the receive lens along the predefined optical path;

an offset light detector positioned outside the predefined optical path to intercept and detect light propagating toward the LIDAR device from a region of the environment other than the illuminated region; and

a controller that: (i) collects sensor data obtained using the array of light detectors, and (ii) based on at least output from the offset light detector, determines whether the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR device.

2. The LIDAR device of claim 1, further comprising:

a receiver housing coupled to the receive lens, wherein the array of light detectors is disposed inside the receiver housing, and wherein the receiver housing prevents external light other than light received by the receive lens from propagating toward the array of light detectors.

3. The LIDAR device of claim 2, wherein the offset light detector is disposed inside the receiver housing and positioned to detect light focused by the receive lens along a different optical path than the predetermined optical path.

4. The LIDAR device of claim 1, further comprising:

a light filter that prevents light having wavelengths outside the wavelength range from propagating toward the array of light detectors and the offset light detector, wherein the light

source emits light having a wavelength in the wavelength range.

5. The LIDAR device of claim 1, wherein the controller detects one or more objects in the environment of the LIDAR device based on at least the collected sensor data.

6. The LIDAR device of claim 1, wherein the controller:

compares optical characteristics of light detected by the offset light detector to optical characteristics of the light emitted by the light source of the LIDAR device,

wherein determining whether the collected sensor data includes sensor data associated with another light source is based on the comparison.

7. The LIDAR device of claim 6, wherein the controller modifies the collected sensor data in response to the comparison indicating a match between the optical characteristics of the light detected by the offset light detector and the optical characteristics of the light emitted by the light source of the LIDAR device.

8. The LIDAR device of claim 7, wherein modifying the collected sensor data comprises adjusting the collected sensor data to reduce data associated with light from the other light source that is different than the light source of the LIDAR device.

9. The LIDAR device of claim 1, wherein the controller further selects data from a sensor different than the LIDAR device for scanning the illuminated region of the environment in response to a determination that the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR device.

10. The LIDAR device of claim 1, wherein the LIDAR device is included in a vehicle, and wherein the controller further modifies a navigation operation of the vehicle in response to a determination that the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR device.

11. The LIDAR device of claim 1, further comprising:

a rotating platform that mounts the light source, the transmit lens, the receive lens, the array of light detector and the offset light detector, wherein the controller adjusts the FOV of

the LIDAR device based on the controller causing a rotation of the rotating platform.

12. A method comprising:

emitting light via a light source of a LIDAR device;

directing, via a transmit lens, the emitted light to define a field-of-view (FOV) of the LIDAR device, wherein the emitted light illuminates a region of an environment within the FOV defined by the transmit lens;

focusing, via a receive lens, light propagating toward the LIDAR device from the illuminated region of the environment along a predefined optical path;

detecting, at an array of light detectors positioned along the predefined optical path, the light propagating toward the LIDAR device from the illuminated region of the environment focused by the receive lens along the predefined optical path;

detecting, at an offset light detector positioned outside the predefined optical path, light propagating toward the LIDAR device from a region of the environment other than the illuminated region;

collecting sensor data obtained using the array of light detectors; and

based on at least the detected light at the offset light detector, determining whether the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR device.

13. The method of claim 12, wherein determining whether the collected sensor data includes sensor data associated with another light source comprises:

comparing optical characteristics of light detected by the offset light detector to optical characteristics of the emitted light.

14. The method of claim 13, further comprising:

adjusting a modulation of the emitted light in response to the comparison indicating a match between the optical characteristics of the light detected by the offset light detector and the optical characteristics of the emitted light,

wherein collecting the sensor data comprises collecting the sensor data according to the adjusted modulation of the emitted light.

15. The method of claim 12, further comprising:

in response to a determination that the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR device, selecting a sensor different than the LIDAR device for scanning the illuminated region of the environment.

16. The method of claim 12, further comprising:

in response to a determination that the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR device, modifying a navigation operation of a vehicle that includes the LIDAR device.

17. A system comprising:

a LIDAR transmitter that comprises: (i) a light source that emits light, and (ii) a transmit lens that directs the emitted light to define a field-of-view (FOV) of the LIDAR transmitter, wherein the emitted light illuminates a region of an environment within the FOV defined by the transmit lens;

a LIDAR receiver that comprises: (i) a receive lens that receives light from the environment, wherein the receive lens focuses light propagating toward the LIDAR receiver from the illuminated portion of the environment along a predefined optical path, (ii) an array of light detectors positioned along the predefined optical path to intercept and detect the light propagating toward the LIDAR receiver from the illuminated portion of the environment focused by the receive lens along the predefined optical path, and (iii) an offset light detector positioned outside the predefined optical path to intercept and detect light propagating toward the LIDAR receiver from a region of the environment other than the illuminated region;

one or more processors; and

data storage storing instructions that, when executed by the one or more processors, cause the system to perform operations comprising:

collecting sensor data obtained using the array of light detectors; and

based on at least output from the offset light detector, determining whether the collected sensor data includes sensor data associated with another light source different than the light source of the LIDAR transmitter.

18. The system of claim 17, wherein the operations further comprise:

determining a three-dimensional (3D) representation of the environment based on at

least the collected sensor data and the output from the offset light detector.

19. The system of claim 18, wherein determining the 3D representation comprises:

based on at least the output from the offset light detector, identifying a subset of the collected sensor data associated with light from the other light source that is different than the light source of the LIDAR device; and

modifying the 3D representation based on the identified subset of the collected sensor data.

20. The system of claim 18, further comprising:

a rotating platform that mounts the LIDAR transmitter comprising the light source and the transmit lens and the LIDAR receiver comprising the receive lens, the array of light detectors, and the offset light detector, wherein the operations further comprise causing a rotation of the rotating platform to adjust the FOV of the LIDAR transmitter, wherein collecting the sensor data comprises collecting sensor data for a plurality of FOVs of the LIDAR transmitter.