What is claimed is:

1. An apparatus for producing structured light, the apparatus comprising a first optical arrangement comprising:

a microlens array comprising a multitude of transmissive or reflective microlenses which are regularly arranged at a lens pitch P; and

an illumination unit for illuminating the microlens array;

the illumination unit comprising an array of light sources for emitting light of a wavelength L each and having an aperture each, wherein the apertures are located in a common emission plane which is located at a distance D from the microlens array, wherein

$P^2 = 2LD/N$,

and wherein N is an integer with $N \geq 1$,

wherein each of the light sources is arranged to illuminate a respective subset of the multitude of microlenses, each of the subsets comprising a plurality of neighboring microlenses, such that light from each particular one of the light sources passes through different ones of the microlenses in the respective subset so as to produce an interference pattern.

2. The apparatus according to claim 1, wherein the microlenses are aspherical microlenses.

3. The apparatus according to claim 1, wherein the microlens array is a two-dimensional microlens array.

4. The apparatus according to claim 1, wherein the array of light sources is a two-dimensional array of light sources.

5. The apparatus according to claim 1, wherein the illumination unit is structured and configured to emit spatially incoherent light.

6. The apparatus according to claim 1, wherein the array of light sources comprises an array of vertical-cavity surface-emitting lasers.

7. The apparatus according to claim 1, wherein the light sources of the array are regularly arranged at a light source pitch Q, wherein P = Q.

8. The apparatus according to claim 7, wherein an axis along which the microlenses are arranged at the pitch P is aligned parallel to an axis along which the light sources are arranged at the pitch Q.

9. The apparatus according to claim 1, wherein the light sources of the array are regularly arranged at a light source pitch Q, wherein for P and Q applies $pP = qQ$, wherein p and q are integers having no common factor, with $p \geq 1$ and $q \geq 1$.

10. The apparatus according to claim 9, wherein an axis along which the microlenses are arranged at the pitch P is aligned parallel to an axis along which the light sources are arranged at the pitch Q.

11. The apparatus according to claim 1, wherein the apparatus comprises a second optical arrangement comprising:

a second microlens array comprising a multitude of transmissive or reflective second microlenses which are regularly arranged at a lens pitch P2; and

a second illumination unit for illuminating the second microlens array;

the second illumination unit comprising a second array of light sources for emitting light of a wavelength L2 each and having an aperture referred to as second aperture each, wherein the second apertures are located in a common plane referred to as second emission plane which is located at a distance D2 from the second microlens array, wherein

$(P2)^2 = 2*L2*D2/N2$,

and wherein N2 is an integer with $N2 \geq 1$, and wherein

the second microlens array is different from the microlens array of the first optical

arrangement; or

the second illumination unit is different from the illumination unit of the first optical arrangement; or

both, the second microlens array is different from the microlens array of the first optical arrangement, and the second illumination unit is different from the illumination unit of the first optical arrangement.

12. The apparatus according to claim 11, wherein the second microlens array is different from the microlens array of the first optical arrangement, and wherein the second microlens array is shifted with respect to the microlens array of the first optical arrangement in a direction parallel to the emission plane.

13. The apparatus according to claim 11, wherein the lens pitches P1 and P2 are different from each other.

14 The apparatus according to claim 11, wherein the wavelengths L1 and L2 are different from each other.

15. The apparatus according to claim 11, wherein the second microlens array is rotated with respect to the microlens array of the first optical arrangement.

16. The apparatus according to claim 15, wherein the second microlens array and the microlens array of the first optical arrangement are both of rectangular geometry having two mutually perpendicular symmetry axes each, and wherein an angle φ between the symmetry axes of the second microlens array and the symmetry axes of the microlens array of the first optical arrangement amounts to at least 1° and to at most 20°.

17. The apparatus according to claim 11, wherein the second microlens array and the microlens array of the first optical arrangement are embodied in a single-piece optical component.

18. The apparatus according to claim 1, wherein the optical arrangement comprises an additional optical component, wherein the microlens array is arranged between the illumination unit and the additional optical component.

19. The apparatus according to claim 18, wherein the additional optical component comprises at least one prism.

20. The apparatus according to claim 18, wherein the additional optical component comprises a prism array.

21. The apparatus according to claim 1, wherein the structured light originates from the interference patterns.

22. The apparatus according to claim 1, wherein respective subsets illuminated by neighboring ones of the light sources are partially overlapping.

23. The apparatus according to claim 1, wherein each of the light sources emits the light of the wavelength L into an emission cone having a circular or non-circular cross-section, wherein the emission cones of immediately adjacent light sources are partially overlapping.

24. An apparatus for producing structured light, the apparatus comprising an optical arrangement comprising:

a first microlens array comprising a multitude of transmissive or reflective microlenses which are regularly arranged at a lens pitch P1;

a second microlens array comprising a multitude of transmissive or reflective microlenses which are regularly arranged at a lens pitch P2; and

an illumination unit for illuminating the first microlens array and the second microlens array;

the illumination unit comprising:

a first array of light sources for emitting light of a wavelength L1 each and having an aperture each, wherein the apertures are located in a common first emission plane which is located at a distance D1 from the first microlens array, wherein

$(P1)^2 = 2*(L1)*(D1)/(N1)$,

and wherein N1 is an integer with $N \geq 1$; and

a second array of light sources for emitting light of a wavelength L2 each and having an aperture each, wherein the apertures are located in a common second emission plane which is located at a distance D2 from the first microlens array, wherein

$(P2)^2 = 2*(L2)*(D2)/(N2)$,

and wherein N2 is an integer with $N \geq 1$.

25. The apparatus according to claim 24, wherein the first array of light sources is one and the same as the second array of light sources.

26. The apparatus according to claim 24, wherein the first array of light sources is different from the second array of light sources.

27. The apparatus according to claim 26, wherein distance D1 is different from distance D2.

28. The apparatus according to claim 26, wherein wavelength L1 is different from wavelength L2.

29. The apparatus according to claim 24, wherein lens pitch P1 is different from lens pitch P2.

30. The apparatus according to claim 24, wherein the first emission plane is identical with the second emission plane.