CLAIMS

1) Method for controlling the activity of at least two light radiation sources (2, 3) belonging to a stereolithography machine (1) and suited to act at the level of a portion (104) of a superimposition area (101) defined on the work surface (100) of said stereolithography machine (1) for making a three-dimensional object (200) through stereolithography, **characterized in that** it activates the following elements for each one of the lines (210) with generic length *L* that define each layer (201) of said three-dimensional object (200) within said portion (104):

- a first one of said two light radiation sources (2) for a first section (211) of said line (210) with length *X*;
- the second one of said two light radiation sources (3) for the remaining second section (212) of said line (210) with length *Y,*

the value of said length *X* of said first section (211) being selected within the interval $0 <= X <= L$ and *Y* being calculated as equal to $L - X$.

2) Method according to claim 1, of the type comprising the following steps:

- acquiring a first set of data representative of the geometry of said three-dimensional object (200);
- subdividing said three-dimensional object (200) into a plurality of layers (201);
- defining the position of each one of said layers (201) on said work surface (100);
- identifying, within said portion (104) of said superimposition area (101), each one of said lines (210) with generic length *L* that define each one of said layers (201);

characterized in that it furthermore comprises the steps of:

- defining, for each one of said lines (210) with generic length *L,* said value of said length *X* of said first section (211) within the interval $0 <= X <= L$;
- calculating, for each one of said lines (210) with generic length *L,* the length of said second section (212) equal to $Y = L - X$;
- generating the data relating to said activation of said two light radiation sources (2, 3) so that a first one of said two light radiation sources (2) is activated along said first section (211) of each one of said lines (210) and the second one of said two light radiation sources (3) is activated

along said remaining second section (212).

3) Method according to any of the preceding claims, **characterized in that** said value of said length *X* of said first section (211) is selected at random within the interval *0* <= *X* <= *L*.

4) Method according to any of the preceding claims, **characterized in that** it includes the following steps before said activation of said two light radiation sources (2, 3):

- defining an intermediate line (300) of said portion (104) of said superimposition area (101) substantially in the orthogonal direction with respect to said lines (210);
- selecting, among all said lines (210) with generic length *L,* exclusively the subset (213) containing those of said lines (210) that are incident on said intermediate line (300).

5) Method according to claim 4, **characterized in that** it activates exclusively one of said two light radiation sources (2, 3) at the level of the lines (210) not belonging to said subset (213) of incident lines.

6) Method according to claim 4, **characterized in that** it includes the following steps before said activation of said two light radiation sources (2, 3):

- selecting, in said subset (213) of incident lines, exclusively the subset (214) of lines (210) that extend over the entire width of said portion (104) of said superimposition area (101).

7) Method according to claim 6, **characterized in that** it activates exclusively one of said two light radiation sources (2, 3) at the level of the lines (210) not belonging to said subset (214) of lines extending over the entire width of said portion (104) of said superimposition area (101).

8) Method according to any of the claims from 4 to 7, **characterized in that** for each pair of lines adjacent to each other (210, 210a, 210b) belonging to one of said two subsets (213, 214) it includes the step of selecting the values relating to said lengths *X* of said first sections (211), so that the first section (211) of a first line (210a) of said pair of lines (210a, 210b) along which said first light radiation source (2) is suited to act, and the second section (212) of the second line (210b) of said pair of lines (210a, 210b) along which said second light radiation source (3) is suited to act are incident on said intermediate line (300).

9) Apparatus for controlling the activity of two light radiation sources (2, 3)

belonging to a stereolithography machine (1) and suited to act at the level of a portion (104) of a superimposition area (101) defined on the work surface (100) of said stereolithography machine (1) for making a three-dimensional object (200) through stereolithography, of the type comprising:

- a calculator comprising a processing unit and a memory support suited to be accessed by said processing unit;
- means suited to acquire a first set of data representative of the geometry of said three-dimensional object (200) and to upload it into said memory support;
- means suited to subdivide said three-dimensional object (200) into a plurality of layers (201);
- means suited to define the position of each one of said layers (201) on said work surface (100);
- means suited to identify, within said portion (104) of said superimposition area (101), each one of said lines (210) with generic length *L* defining each one of said layers (201);

characterized in that it comprises:

- means suited to define, for each one of said lines (210) with generic length *L,* said value of said length *X* of said first section (211) within the interval *0* <= *X* <= *L*;
- means suited to calculate, for each one of said lines (210) with generic length *L,* the length of said second section (212);
- means suited to generate the data relating to said activation of said two light radiation sources (2, 3) in such a way that a first one of said two light radiation sources (2) is activated along said first section (211) of each one of said lines (210), and the second one of said two light radiation sources (3) is activated along said remaining second section (212).

10) Apparatus according to claim 9, **characterized in that** said means suited to define said value of said length *X* of said first section (211) are means for the generation of random numbers within the interval *0* <= *X* <= *L*.

11) Computer program product comprising a data support provided with program portions configured in such a way that, when executed on a calculator comprising a processing unit and a memory support accessible by said processing unit, said program portions define:

- a calculator comprising a processing unit and a memory support accessible

by said processing unit;

- means suited to acquire a first set of data representative of the geometry of said three-dimensional object (200) and to upload it into said memory support;
- means suited to subdivide said three-dimensional object (200) into a plurality of layers (201);
- means suited to define the position of each one of said layers (201) on said work surface (100);
- means suited to identify, within said portion (104) of said superimposition area (101), each one of said lines (210) with generic length *L* defining each one of said layers (201);

characterized in that it comprises:

- means suited to define, for each one of said lines (210) with generic length *L,* said value of said length *X* of said first section (211) within the interval *0* <= *X* <= *L*;
- means suited to calculate, for each one of said lines (210) with generic length *L,* the length of said second section (212);
- means suited to generate the data relating to said activation of said two light radiation sources (2, 3) in such a way that a first one of said two light radiation sources (2) is activated along said first section (211) of each one of said lines (210), and the second one of said two light radiation sources (3) is activated along said remaining second section (212).

12) Computer program product according to claim 11, **characterized in that** said means suited to define said value of said length *X* of said first section (211) are means suited to generate random numbers within the interval *0* <= *X* <= *L*.

CLAIMS

1) Method for controlling the activity of at least two light radiation sources (2, 3) belonging to a stereolithography machine (1) and suited to act at the level of a portion (104) of a superimposition area (101) defined on the work surface (100) of said stereolithography machine (1) for making a three-dimensional object (200) through stereolithography, said method providing to activate the following elements for each one of the lines (210) with generic length *L* that define each layer (201) of said three-dimensional object (200) within said portion (104):

- a first one of said two light radiation sources (2) for a first section (211) of said line (210) with length *X*;
- the second one of said two light radiation sources (3) for the remaining second section (212) of said line (210) with length *Y,*

the value of said length *X* of said first section (211) being selected within the interval *0* <= *X* <= *L* and *Y* being calculated as equal to *L - X;*

characterized in that said value of said length *X* of said first section (211) for each one of said lines (210) is selected at random within the interval *0* <= *X* <= *L* in such a way to create a connection line (220) of the broken type between the two portions (202) and (203) of each layer (201) defined respectively by said first sections (211) of said lines (210) and by said second sections (212) of said lines (210).

2) Method according to claim 1, of the type comprising the following steps:

- acquiring a first set of data representative of the geometry of said three-dimensional object (200);
- subdividing said three-dimensional object (200) into a plurality of layers (201);
- defining the position of each one of said layers (201) on said work surface (100);
- identifying, within said portion (104) of said superimposition area (101), each one of said lines (210) with generic length *L* that define each one of said layers (201);

characterized in that it furthermore comprises the steps of:

- defining, for each one of said lines (210) with generic length *L,* said value of said length *X* of said first section (211) within the interval *0* <= *X* <= *L*;

- calculating, for each one of said lines (210) with generic length *L,* the length of said second section (212) equal to $Y = L - X$;
- generating the data relating to said activation of said two light radiation sources (2, 3) so that a first one of said two light radiation sources (2) is activated along said first section (211) of each one of said lines (210) and the second one of said two light radiation sources (3) is activated along said remaining second section (212).

3) Method according to any of the preceding claims, **characterized in that** it includes the following steps before said activation of said two light radiation sources (2, 3):

- defining an intermediate line (300) of said portion (104) of said superimposition area (101) substantially in the orthogonal direction with respect to said lines (210);
- selecting, among all said lines (210) with generic length *L,* exclusively the subset (213) containing those of said lines (210) that are incident on said intermediate line (300).

4) Method according to claim 3, **characterized in that** it activates exclusively one of said two light radiation sources (2, 3) at the level of the lines (210) not belonging to said subset (213) of incident lines.

5) Method according to claim 3, **characterized in that** it includes the following steps before said activation of said two light radiation sources (2, 3):

- selecting, in said subset (213) of incident lines, exclusively the subset (214) of lines (210) that extend over the entire width of said portion (104) of said superimposition area (101).

6) Method according to claim 5, **characterized in that** it activates exclusively one of said two light radiation sources (2, 3) at the level of the lines (210) not belonging to said subset (214) of lines extending over the entire width of said portion (104) of said superimposition area (101).

7) Apparatus for controlling the activity of two light radiation sources (2, 3) belonging to a stereolithography machine (1) and suited to act at the level of a portion (104) of a superimposition area (101) defined on the work surface (100) of said stereolithography machine (1) for making a three-

dimensional object (200) through stereolithography, of the type comprising:

- a calculator comprising a processing unit and a memory support suited to be accessed by said processing unit;
- means suited to acquire a first set of data representative of the geometry of said three-dimensional object (200) and to upload it into said memory support;
- means suited to subdivide said three-dimensional object (200) into a plurality of layers (201);
- means suited to define the position of each one of said layers (201) on said work surface (100);
- means suited to identify, within said portion (104) of said superimposition area (101), each one of said lines (210) with generic length *L* defining each one of said layers (201);
- means suited to define, for each one of said lines (210) with generic length *L,* said value of said length *X* of said first section (211) within the interval *0* <= *X* <= *L*;
- means suited to calculate, for each one of said lines (210) with generic length *L,* the length of said second section (212);
- means suited to generate the data relating to said activation of said two light radiation sources (2, 3) in such a way that a first one of said two light radiation sources (2) is activated along said first section (211) of each one of said lines (210), and the second one of said two light radiation sources (3) is activated along said remaining second section (212);

characterized in that said means suited to define said value of said length *X* of said first section (211) are means for the generation of random numbers within the interval *0* <= *X* <= *L*.

8) Computer program product comprising a data support provided with program portions configured in such a way that, when executed on a calculator comprising a processing unit and a memory support accessible by said processing unit, said program portions define:

- a calculator comprising a processing unit and a memory support accessible by said processing unit;
- means suited to acquire a first set of data representative of the geometry of said three-dimensional object (200) and to upload it into said memory support;
- means suited to subdivide said three-dimensional object (200) into a

plurality of layers (201);

- means suited to define the position of each one of said layers (201) on said work surface (100);
- means suited to identify, within said portion (104) of said superimposition area (101), each one of said lines (210) with generic length *L* defining each one of said layers (201);
- means suited to define, for each one of said lines (210) with generic length *L,* said value of said length *X* of said first section (211) within the interval *0* <= *X* <= *L*;
- means suited to calculate, for each one of said lines (210) with generic length *L,* the length of said second section (212);
- means suited to generate the data relating to said activation of said two light radiation sources (2, 3) in such a way that a first one of said two light radiation sources (2) is activated along said first section (211) of each one of said lines (210), and the second one of said two light radiation sources (3) is activated along said remaining second section (212);

characterized in that said means suited to define said value of said length *X* of said first section (211) are means suited to generate random numbers within the interval *0* <= *X* <= *L*.