CLAIMS

1. A laser system comprising:

an optical phased array laser comprising:

a seed laser; and

a laser beam splitting and combining subsystem receiving a laser output from said seed laser and providing a combined laser output,

said laser beam splitting and combining subsystem varying a phase of said combined laser output to focus said combined laser output on a substrate, said combined laser output not being focused on said substrate in the absence of said varying of said phase.

2. A laser system according to claim 1, and also comprising an optical element receiving said combined laser output from said laser beam splitting and combining subsystem, said optical element being configured, in combination with said varying of said phase, to focus said combined laser output on said substrate.

3. A laser system according to claim 2, wherein said optical element is configured, in said absence of said varying of said phase, to focus said combined laser output at a focal point not coincident with said substrate.

4. A laser system according to any one of claims 1 - 3, wherein laser beams back-scattered from said substrate are not focused on said optical phased array laser, thereby preventing damage to said optical phased array laser.

5. A laser system according to claim 1, wherein said laser beam splitting and combining subsystem is operative, by said varying of said phase, for modifying a shape of wavefronts of said combined laser output, thereby modifying a focus of said combined laser output.

6. A laser system according to claim 1, wherein said laser beam splitting and combining subsystem is additionally operative, by said varying of said phase, to dynamically control a position and a shape of a far field intensity pattern of said combined laser output.

7. A method for focusing of laser beams in a laser system comprising:

receiving a laser output from a seed laser;

splitting and combining said laser output to provide a combined laser output; and

varying a phase of said combined laser output to focus said combined laser output on a substrate, said combined laser output not being focused on said substrate in the absence of said varying of said phase.

8. A method according to claim 7, and also comprising receiving said combined laser output by an optical element, said optical element being configured, in combination with said varying of said phase, to focus said combined laser output on said substrate.

9. A method according to claim 8, wherein said optical element is configured, in said absence of said varying of said phase, to focus said combined laser output at a focal point not coincident with said substrate.

10. A method according to any one of claims 7 – 9, wherein back-scatter from said substrate is not focused on said seed laser, thereby preventing damage to said seed laser.

11. A method according to claim 7, wherein said varying of said phase comprises modifying a shape of wavefronts of said combined laser output, thereby modifying a focus of said combined laser output.

12. A method according to claim 7, and also comprising dynamically controlling a position and a shape of a far field intensity pattern of said combined laser output, by way of said varying of said phase.