CLAIMS

1. A method for controlling a propulsion system of a marine vehicle, the propulsion system comprising a foil wheel, at least two foils attached with the foil wheel in a rotatable manner, an actuator arrangement, and a controller, the method comprising:

forming, by the controller, data on pitch angles of the at least two foils based on at least an angularly variable eccentricity of the at least two foils and an angle of rotation of the foil wheel, wherein the variable eccentricity is limited at a portion of the angle of rotation of the foil wheel, wherein the portion of the angle of rotation of the foil wheel is located around a first angle of rotation, wherein a foil experiences a highest load at the first angle of rotation; and

setting, by the actuator arrangement receiving the data from the controller, the at least two foils at the pitch angles based on the data.

2. A method according to claim 1, wherein the at least two foils are individually controllable.

3. A method according to any of the preceding claims, further comprising:

determining the portion of the angle of rotation of the foil wheel using at least a limitation amplitude parameter and a steepness parameter.

4. A method according to claim 3, further comprising:

determining a first eccentricity, wherein the first eccentricity is an optimum constant eccentricity for unlimited foil motor torque;

determining a second eccentricity, wherein the second eccentricity is a maximum constant eccentricity endured by the foil;

determining the limitation amplitude parameter as a deviation between the first eccentricity and the second eccentricity; and

determining the steepness parameter such that a first derivative and a second derivative of the data on the pitch angles with respect to the angle of rotation are smooth.

5. A method according to any of claims 1 to 2, further comprising:

determining the portion of the angle of rotation of the foil wheel using

parameters of a Fourier series.

6. A computer-readable medium comprising program instructions which, when run by an apparatus, cause the apparatus to carry out at least a method according to any of the preceding claims.

7. A computer-readable medium according to claim 6, wherein the computer-readable medium is a non-transitory computer-readable medium.

8. A propulsion system for a marine vehicle, comprising:

a foil wheel, at least two foils, which are in a rotatable manner attached with the foil wheel, an actuator arrangement, and a controller;

the controller comprising one or more processors and one or more memories including computer program code;

the one or more memories and the computer program code being configured to, with the one or more processors, cause at least the controller to form data on pitch angles of the at least two foils based on at least an angularly variable eccentricity of the at least two foils and an angle of rotation of the foil wheel, wherein the variable eccentricity is limited at a portion of the angle of rotation of the foil wheel, wherein the portion of the angle of rotation of the foil wheel is located around a first angle of rotation, wherein a foil experiences a highest load at the first angle of rotation, and communicate the data on the pitch angles to the actuator arrangement; and

the actuator arrangement being configured to set the at least two foils at the pitch angles based on the data.

9. A propulsion system according to claim 8, wherein the at least two foils are individually controllable.

10. A propulsion system according to any of claims 8 to 9, wherein the one or more memories and the computer program code are configured to, with the one or more processors, further cause the controller to determine the portion of the angle of rotation of the foil wheel using at least a limitation amplitude parameter and a steepness parameter.

11. A propulsion system according to claim 10, wherein the one or more

memories and the computer program code are configured to, with the one or more processors, further cause the controller to:

determine a first eccentricity, wherein the first eccentricity is an optimum constant eccentricity for unlimited foil motor torque;

determine a second eccentricity, wherein the second eccentricity is a maximum constant eccentricity endured by the foil;

determine the limitation amplitude parameter as a deviation between the first eccentricity and the second eccentricity; and

determine the steepness parameter such that a first derivative and a second derivative of the data on the pitch angles with respect to the angle of rotation are smooth.

12. A propulsion system according to any of claims 8 to 9, wherein the one or more memories and the computer program code are configured to, with the one or more processors, further cause the controller to determine the portion of the angle of rotation of the foil wheel using parameters of a Fourier series.

13. A marine vehicle, comprising at least one propulsion system according to any of claims 8 to 12.