**WHAT IS CLAIMED IS:**

1. An inertial regulation active suspension system based on posture deviation of a vehicle, comprising a vehicle body and a plurality of wheels, an inertial measurement unit, an electronic control unit, a servo controller group, suspension servo actuating cylinders corresponding to the wheels one by one, and displacement sensors, wherein the inertial measurement unit, the electronic control unit and the servo controller group are secured to the vehicle body; the wheels are connected to a lower part of the vehicle body through the suspension servo actuating cylinders; the displacement sensors are used for measuring strokes of the suspension servo actuating cylinders; the electronic control unit is communicated with the inertial measurement unit and the servo controller group, respectively; the servo controller group is communicated with the displacement sensors; the electronic control unit reads vehicle posture parameters measured by the inertial measurement unit, and calculates a posture deviation of the vehicle at a current moment from at a previous moment, and then outputs one or more posture control parameters to the servo controller group; and the servo controller group controls each of the suspension servo actuating cylinders according to a position and the one or more posture control parameters output by the electronic control unit and displacement feedback values of the displacement sensors, so that a centroid of the vehicle moves approximately along a straight line or an arc line to permit a posture of the vehicle body to remain unchanged;

all of the wheels are divided into three wheel groups, each of the three wheel groups is provided with one or more wheels; when the number of the wheels in the wheel group is more than one, upper chambers of the suspension servo actuating cylinders in the wheel group are communicated with one another and lower chambers of the suspension servo actuating cylinders in the wheel group are communicated with one another, so that the wheel group constitutes a supporting point for supporting the vehicle body, and the three wheel groups constitute three supporting points of the vehicle body; the posture of the vehicle body is controlled by controlling supporting heights of the three supporting points.

2. A control method of the inertial regulation active suspension system based on

the posture deviation of the vehicle according to claim 1, characterized in that,

a coordinate system OXYZ in which a center point O of the inertial measurement unit is taken as a coordinate origin is established, a right forward direction in which the vehicle travels is defined as a Y-axis positive direction, a right side direction in which the vehicle travels is defined as a X-axis positive direction, and an upward direction perpendicular to a XOY plane is defined as a Z-axis positive direction; a centroid of the vehicle body is defined as W; scanning periods are preset in the electronic control unit; and the control method comprises steps of:

1) in some scanning period, a vertical displacement $w_O$, a pitch angle $\alpha_O$ and a roll angle $\beta_O$ of the coordinate origin O are measured by the inertial measurement unit and output to the electronic control unit;

2) the electronic control unit calculates a vertical displacement $w_w$, a pitch angle $\alpha_w$ and a roll angle $\beta_w$ at the centroid W of the vehicle according to a geometric relationship of the centroid W relative to the coordinate origin O and the vertical displacement $w_O$, the pitch angle $\alpha_O$ and the roll angle $\beta_O$ of the coordinate origin O;

3) the electronic control unit performs a high-pass filter with a cutoff frequency $\omega_H$ on the vertical displacement $w_w$, the pitch angle $\alpha_w$ and the roll angle $\beta_w$, and after being filtered, the vertical displacement is $w_H$, the pitch angle is $\alpha_H$ and the roll angle is $\beta_H$;

4) the vertical displacement $w_H$, the pitch angle $\alpha_H$ and the roll angle $\beta_H$ obtained in step 3) are compared with values of the previous scanning period, to calculate variations $\Delta w$、$\Delta\alpha$、$\Delta\beta$ of the vertical displacement, the pitch angle and the roll angle ; and $-\Delta w$、$-\Delta\alpha$、$-\Delta\beta$ are taken as posture relative correction quantities; a target value of the extension and retraction of each of the suspension servo actuating cylinders of the vehicle is calculated through an inverse kinematics algorithm of a vehicle suspension mechanism, and the target value is transmitted to the servo controller group such that displacement servo control is performed on each of the suspension servo actuating cylinders, thereby realizing the control of a vehicle body posture target, maintaining the vertical displacement $w_H$, the pitch angle $\alpha_H$ and the roll angle $\beta_H$ as stable as possible, and making a motion trajectory of the centroid of

the vehicle in a straight line or in an arc line while keeping the posture of the vehicle body approximately unchanged.

3. The control method of the inertial regulation active suspension system based on the posture deviation of the vehicle according to claim 2, wherein a calculation formula of the vertical displacement $w_w$, the pitch angle $\alpha_w$ and the roll angle $\beta_w$ at the centroid W of the vehicle is as follows:

$$\begin{cases} w_w = w_O + \boldsymbol{y_w}\sin\alpha_O - \boldsymbol{x_w}\sin\beta_O \\ \alpha_w = \alpha_O \\ \beta_w = \beta_O \end{cases}$$

wherein the centroid W has coordinates $x_W$, $y_W$ and $z_W$ in coordinate system OXYZ.

4. The control method of the inertial regulation active suspension system based on the posture deviation of the vehicle according to claim 2, characterized in that the cut-off frequency $w_H$ is determined by following ways:

S1, the vertical displacement $w_H$, the pitch angle $\alpha_H$ and the roll angle $\beta_H$ output after the high-pass filter all converge to 0 when the vehicle is stationary on a horizontal plane;

S2, the vertical displacement $w_H$, the pitch angle $\alpha_H$ and the roll angle $\beta_H$ output after the high-pass filter converge to a smaller value that is in an error range necessary for stable control of the system, when the vehicle stops at a transverse slope and a longitudinal slope for which a limit is allowed; and

S3, a smaller value is selected by the cut-off frequency $w_H$ when conditions of S1 and S2 are satisfied.