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Series Motor Four Quadrants Drive DC Chopper: Reverse Mode with Automatic Reverse Parking of DC Drive Electric Car with Constant Brake Motor Control Combine to the Propulsion Motor Torque

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Abstract:

This paper is focused on the motor torque control of a DC motor attached to a hydraulic brake pedal to provide a friction-braking effect (the combination makes an electrohydraulic brake). This combination provides a braking effect to control the vehicle speed, and makes the final stop to ensure a correct position of EV during deceleration and stop of DC drive electric car for automatic reverse parking. The DC drive electric car uses a series motor powered by a four-quadrant drive DC chopper. The integration of the electrohydraulic brake with propulsion motor control is used to provide a braking action to decelerate and finally stop the vehicle. The control technique was simulated by using MATLAB/Simulink and results indicated that the technique had successfully met the objective of torque, current, speed and position control for automatic reverse parking, and thus was suitable for implementation with a DC drive electric car by using the series motor and four-quadrant DC chopper.