A rail vehicle has at least two railroad cars (111, 112, 11n) and a braking system with control units (121-1, 121-2, 122-1, 122-2, 12n-1, 12n-2) at least one of which is arranged in each railroad car. Each control unit receives a brake input signal (B), and in response thereto generates a control signal (c_{11}, c_{12}, c_{13}, c_{14}, c_{21}, c_{22}, c_{23}, c_{24}, c_{n1}, c_{n2}, c_{n3}, c_{n4}). The control signals are generated on the further basis of at least one motion parameter expressing a respective movement of the railroad cars (111, 112, 11n). At least one brake actuator (131_{1a}, 131_{1b}, 131_{2a}, 131_{2b}, 131_{1a}, 131_{1b}, 131_{2a}, 131_{2b}, $13n_{1a}$, $13n_{1b}$, $13n_{2a}$, $13n_{2b}$) is arranged in each railroad car. Each brake actuator receives the control signal generated by a control unit in the same railroad car as the brake actuator is located, and based thereon produces a brake-force signal (f_{11}, f_{12}, f_{13}, f_{14}, f_{21}, f_{22}, f_{23}, f_{24}, f_{n1}, f_{n2}, f_{n3}, f_{n4}) to a brake unit (141-1, 141-2, 141-3, 141-4, 142-1, 142-2, 142-3, 142-4, 14n-1, 14n-2, 14n-3, 14n-4). In response thereto, each brake unit causes a pressing member to apply a braking force to a rotatable member so as to reduce a rotation speed of at least one wheel of a railroad car in the rail vehicle.