Figure S1. ***A,*** Histological section from a mouse brain after removal of the wire-array. The arrow indicates the position where one electrode tip was located in stratum pyramidale. ***B,*** Histological section from a mouse brain after removal of a silicone-probe (50 μm intersite spacing). The lesioning site of the probe (marked in red) was located in stratum radiatum (lower arrow), about 100 μm from stratum pyramidale (upper arrow).

Figure S2. ***A,*** Power of ripples during awake immobility (AI, thin lines) and SWS (thick lines, as in Fig. 1*C,* to allow comparison between states). ***B,*** Average sharp wave profiles during AI and SWS.

Figure S3. Modulation of firing probability (*A*) and histogram of preferred discharge phases (*B*) of all pyramidal cells recorded during ripple-oscillations (single units without selection for isolation distance; 38 cells from control and 218 cells from PV-ΔGluR-A mice).

Figure S4. *A*, Autocorrelations computed from spike-trains of interneurons during ripple-oscillations (group averages, mean±SEM). *B*, Cumulative probability density plots of the first peak timing from individual interneuron autocorrelations (ACG, $p \approx 0.08$ for lags <= 8 ms).