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Phase diagram and quantum phase transitions in sodium spinor condensates JIE JIANG, LICHAO ZHAO, YINGMEI LIU, Department of Physics, Oklahoma State University, Stillwater, OK 74078 — We observe two quantum phase transitions in sodium spinor condensates driven by a microwave dressing field and antiferromagnetic s-wave interactions. We find that the ground states of the antiferromagnetic spinor condensates can be created by adiabatically tuning the microwave field across one of the two quantum phase transitions. This method avoids significant atom losses in large microwave fields, and thus allows us to explore the phase diagram of antiferromagnetic spinor condensates in both negative and positive quadratic Zeeman energy regions. We also find a good agreement between our data and the mean-field theory for spinor Bose gases.

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