Gravitational waves from compact binaries in scalar-tensor gravity to second post-Newtonian order[1] ANNA HEFFERNAN, Univ of Florida - Gainesville, RYAN LANG, Hillsdale College, CLIFFORD WILL, Univ of Florida - Gainesville — Testing alternative theories of gravity in the strong-field gravitational-wave regime can be an important complement to solar-system tests. A leading alternative is the class of scalar-tensor theories; for binary systems of compact objects, equations of motion and the tensor waveform and energy flux have been derived through second post-Newtonian (2PN) order. However, because the scalar field in these theories admits dipole gravitational radiation, a calculation of the scalar contribution to the energy flux requires calculating the scalar field and the equations of motion to 3PN order. We report on progress toward completing this calculation and obtaining waveforms to 2PN order, suitable for gravitational-wave data analysis.

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