Scientific Justification *Be sure to include overall significance to astronomy. For standard proposals limit text to one page with figures, captions and references on no more than two additional pages.*

As galaxies merge, the supermassive black holes (SMBH) ($M_{BH} > 1 \times 10^5 M_\odot$) at their cores are destined to similar fates [Burke-Spolaor et al., 2019]. Once the SMBHs reach an orbital separation of milliparsecs, their binary evolution is governed by nanohertz gravitational wave (GW) emission [Kelley et al., 2019]. Recently evidence for a stochastic background made up of these nhz gravitational waves was reported by several PTA experiments around the world, hinting at a population we have yet to directly confirm [Agazie et al., 2023]. While these SMBHs emit GWs through their inspiral, they are expected to emit electromagnetic (EM) radiation through interactions with their circumbinary disk [Kelley et al., 2019]. One such EM tracer of a binary is through relativistic doppler boost. This effect would introduce a periodic variability in the brightness of the system, related to the kinematics of the binary [Charisi et al., 2018]. D'Orazio et al. [2015] determined a model of a SMBHB candidate based on this doppler boost hypothesis, but further observations are required to follow up and confirm the model's predictions. We will observe PG 1302-10 to see if the predictions are accurate, revealing the validity of the doppler boost model for this system. If the observations are consistent with the model, multimessenger followup through targeted GW searches is possible.

Experimental Design *Describe your overall observational program. How will these observations contribute toward the accomplishment of the goals outlined in the science justification?*

— Enter your experimental design information

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