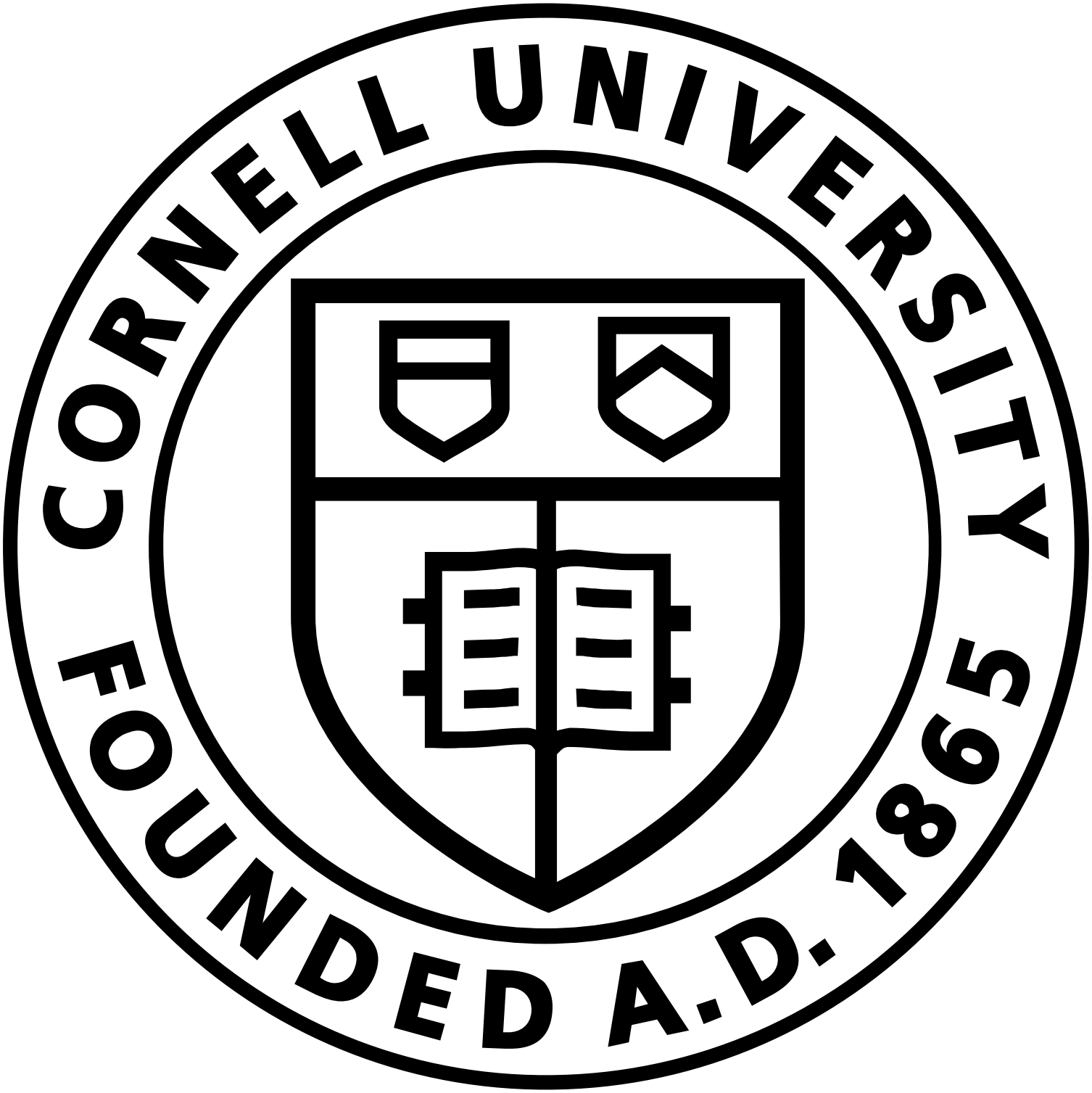
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Astrophysics > Solar and Stellar Astrophysics

arXiv:1906.11464 (astro-ph)

[Submitted on 27 Jun 2019 (v1), last revised 30 Jun 2019 (this version, v2)]

The supersoft X-ray transient ASASSN-16oh as a thermonuclear runaway without mass ejection

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The supersoft X-ray and optical transient ASASSN-16oh has been interpreted by Maccarone et al. (2019) as having being induced by an accretion event on a massive white dwarf, resembling a dwarf nova super-outburst. These authors argued that the supersoft X-ray spectrum had a different origin than in an atmosphere heated by shell nuclear burning, because no mass was ejected. We find instead that the event's timescale and other characteristics are typical of non-mass ejecting thermonuclear runaways, as already predicted by Shara et al. (1977) and the extensive grid of nova models by Yaron et al. (2005). We suggest that the low X-ray and bolometric luminosity in comparison to the predictions of the models of nuclear burning are due to an optically thick accretion disk, hiding most of the white dwarf surface. If this is the case, we calculated that the optical transient can be explained as a non-ejective thermonuclear event on a WD of \simeq1.1M_\odot accreting at the rate of \simeq3.5{-}5{\times}10^{-7}M_\odotyr^{-1}. We make predictions that should prove whether the nature of the transient event was due to thermonuclear burning or to accretion; observational proof should be obtained in the next few years, because a new outburst should occur within \simeq10-15 years of the event.

Comments:	7 pages, 2 figures
Subjects:	**Solar and Stellar Astrophysics (astro-ph.SR)**; High Energy Astrophysical Phenomena (astro-ph.HE)
Journal reference:	The Astrophysical Journal Letters, Volume 879:L5 (5pp), 2019
DOI:	10.3847/2041-8213/ab2887
Cite as:	**arXiv:1906.11464 [astro-ph.SR]**
	(or **arXiv:1906.11464v2 [astro-ph.SR]** for this version)

Submission history

From: Yael Hillman [view email]
[v1] Thu, 27 Jun 2019 07:19:18 UTC (193 KB)
[v2] Sun, 30 Jun 2019 05:57:21 UTC (193 KB)

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