

- [4] Kazunori Akiyama et al. First M87 Event Horizon Telescope Results. III. Data Processing and Calibration. *Astrophys. J. Lett.*, 875(1):L3, 2019. [arXiv:1906.11240](#), [doi:10.3847/2041-8213/ab0c57](#).
- [5] Kazunori Akiyama et al. First M87 Event Horizon Telescope Results. IV. Imaging the Central Supermassive Black Hole. *Astrophys. J. Lett.*, 875(1):L4, 2019. [arXiv:1906.11241](#), [doi:10.3847/2041-8213/ab0e85](#).
- [6] Kazunori Akiyama et al. First M87 Event Horizon Telescope Results. V. Physical Origin of the Asymmetric Ring. *Astrophys. J. Lett.*, 875(1):L5, 2019. [arXiv:1906.11242](#), [doi:10.3847/2041-8213/ab0f43](#).
- [7] Kazunori Akiyama et al. First M87 Event Horizon Telescope Results. VI. The Shadow and Mass of the Central Black Hole. *Astrophys. J. Lett.*, 875(1):L6, 2019. [arXiv:1906.11243](#), [doi:10.3847/2041-8213/ab1141](#).
- [8] Kazunori Akiyama et al. First M87 Event Horizon Telescope Results. VII. Polarization of the Ring. *Astrophys. J. Lett.*, 910(1):L12, 2021. [arXiv:2105.01169](#), [doi:10.3847/2041-8213/abe71d](#).
- [9] Kazunori Akiyama et al. First M87 Event Horizon Telescope Results. VIII. Magnetic Field Structure near The Event Horizon. *Astrophys. J. Lett.*, 910(1):L13, 2021. [arXiv:2105.01173](#), [doi:10.3847/2041-8213/abe4de](#).
- [10] Kazunori Akiyama et al. First Sagittarius A* Event Horizon Telescope Results. I. The Shadow of the Supermassive Black Hole in the Center of the Milky Way. *Astrophys. J. Lett.*, 930(2):L12, 2022. [doi:10.3847/2041-8213/ac6674](#).
- [11] Kazunori Akiyama et al. First Sagittarius A* Event Horizon Telescope Results. II. EHT and Multiwavelength Observations, Data Processing, and Calibration. *Astrophys. J. Lett.*, 930(2):L13, 2022. [doi:10.3847/2041-8213/ac6675](#).
- [12] Kazunori Akiyama et al. First Sagittarius A* Event Horizon Telescope Results. III. Imaging of the Galactic Center Supermassive Black Hole. *Astrophys. J. Lett.*, 930(2):L14, 2022. [doi:10.3847/2041-8213/ac6429](#).
- [13] Kazunori Akiyama et al. First Sagittarius A* Event Horizon Telescope Results. IV. Variability, Morphology, and Black Hole Mass. *Astrophys. J. Lett.*, 930(2):L15, 2022. [doi:10.3847/2041-8213/ac6736](#).
- [14] Kazunori Akiyama et al. First Sagittarius A* Event Horizon Telescope Results. V. Testing Astrophysical Models of the Galactic Center Black Hole. *Astrophys. J. Lett.*, 930(2):L16, 2022. [doi:10.3847/2041-8213/ac6672](#).
- [15] Kazunori Akiyama et al. First Sagittarius A* Event Horizon Telescope Results. VI. Testing the Black Hole Metric. *Astrophys. J. Lett.*, 930(2):L17, 2022. [doi:10.3847/2041-8213/ac6756](#). I
- [16] Werner Israel. Event horizons in static vacuum space-times. *Phys. Rev.*, 164:1776–1779, 1967. [doi:10.1103/PhysRev.164.1776](#). I
- [17] B. Carter. Axisymmetric Black Hole Has Only Two Degrees of Freedom. *Phys. Rev. Lett.*, 26:331–333, 1971. [doi:10.1103/PhysRevLett.26.331](#).

- [18] Remo Ruffini and John A. Wheeler. Introducing the black hole. *Phys. Today*, 24(1):30, 1971. [doi:10.1063/1.3022513](#). I
- [19] M.S. Volkov and D.V. Galtsov. NonAbelian Einstein Yang-Mills black holes. *JETP Lett.*, 50:346–350, 1989. I
- [20] P. Bizon. Colored black holes. *Phys. Rev. Lett.*, 64:2844–2847, 1990. [doi:10.1103/PhysRevLett.64.2844](#).
- [21] Brian R. Greene, Samir D. Mathur, and Christopher M. O’Neill. Eluding the no hair conjecture: Black holes in spontaneously broken gauge theories. *Phys. Rev. D*, 47:2242–2259, 1993. [arXiv:hep-th/9211007](#), [doi:10.1103/PhysRevD.47.2242](#). I
- [22] Hugh Luckock and Ian Moss. BLACK HOLES HAVE SKYRMION HAIR. *Phys. Lett. B*, 176:341–345, 1986. [doi:10.1016/0370-2693\(86\)90175-9](#). I
- [23] Serge Droz, Markus Heusler, and Norbert Straumann. New black hole solutions with hair. *Phys. Lett. B*, 268:371–376, 1991. [doi:10.1016/0370-2693\(91\)91592-J](#). I
- [24] P. Kanti, N.E. Mavromatos, J. Rizos, K. Tamvakis, and E. Winstanley. Dilatonic black holes in higher curvature string gravity. *Phys. Rev. D*, 54:5049–5058, 1996. [arXiv:hep-th/9511071](#), [doi:10.1103/PhysRevD.54.5049](#). I
- [25] Carlos A.R. Herdeiro and Eugen Radu. Asymptotically flat black holes with scalar hair: a review. *Int. J. Mod. Phys. D*, 24(09):1542014, 2015. [arXiv:1504.08209](#), [doi:10.1142/S0218271815420146](#). I
- [26] Thibault Damour and Gilles Esposito-Farese. Nonperturbative strong field effects in tensor - scalar theories of gravitation. *Phys. Rev. Lett.*, 70:2220–2223, 1993. [doi:10.1103/PhysRevLett.70.2220](#). I
- [27] Thibault Damour and Gilles Esposito-Farese. Tensor - scalar gravity and binary pulsar experiments. *Phys. Rev. D*, 54:1474–1491, 1996. [arXiv:gr-qc/9602056](#), [doi:10.1103/PhysRevD.54.1474](#).
- [28] Vitor Cardoso, Isabella P. Carucci, Paolo Pani, and Thomas P. Sotiriou. Matter around Kerr black holes in scalar-tensor theories: scalarization and superradiant instability. *Phys. Rev. D*, 88:044056, 2013. [arXiv:1305.6936](#), [doi:10.1103/PhysRevD.88.044056](#).
- [29] Vitor Cardoso, Isabella P. Carucci, Paolo Pani, and Thomas P. Sotiriou. Black holes with surrounding matter in scalar-tensor theories. *Phys. Rev. Lett.*, 111:111101, 2013. [arXiv:1308.6587](#), [doi:10.1103/PhysRevLett.111.111101](#). I
- [30] Alexandru Dima, Enrico Barausse, Nicola Franchini, and Thomas P. Sotiriou. Spin-induced black hole spontaneous scalarization. *Phys. Rev. Lett.*, 125(23):231101, 2020. [arXiv:2006.03095](#), [doi:10.1103/PhysRevLett.125.231101](#). I
- [31] Carlos A. R. Herdeiro, Eugen Radu, Hector O. Silva, Thomas P. Sotiriou, and Nicolás Yunes. Spin-induced scalarized black holes. *Phys. Rev. Lett.*, 126(1):011103, 2021. [arXiv:2009.03904](#), [doi:10.1103/PhysRevLett.126.011103](#). I, IIB, IIB
- [32] Emanuele Berti, Lucas G. Collodel, Burkhard Kleihaus, and Jutta Kunz. Spin-induced black-hole scalarization in Einstein-scalar-Gauss-Bonnet theory. *Phys. Rev. Lett.*, 126(1):011104, 2021. [arXiv:2009.03905](#), [doi:10.1103/PhysRevLett.126.011104](#). I

- [33] Carlos A.R. Herdeiro, Eugen Radu, Nicolas Sanchis-Gual, and José A. Font. Spontaneous Scalarization of Charged Black Holes. *Phys. Rev. Lett.*, 121(10):101102, 2018. [arXiv:1806.05190](#), [doi:10.1103/PhysRevLett.121.101102](#). I
- [34] Pedro G. S. Fernandes, Carlos A. R. Herdeiro, Alexandre M. Pombo, Eugen Radu, and Nicolas Sanchis-Gual. Spontaneous Scalarisation of Charged Black Holes: Coupling Dependence and Dynamical Features. *Class. Quant. Grav.*, 36(13):134002, 2019. [Erratum: *Class.Quant.Grav.* 37, 049501 (2020)]. [arXiv:1902.05079](#), [doi:10.1088/1361-6382/ab23a1](#). I
- [35] Pedro G.S. Fernandes, Carlos A.R. Herdeiro, Alexandre M. Pombo, Eugen Radu, and Nicolas Sanchis-Gual. Charged black holes with axionic-type couplings: Classes of solutions and dynamical scalarization. *Phys. Rev. D*, 100(8):084045, 2019. [arXiv:1908.00037](#), [doi:10.1103/PhysRevD.100.084045](#).
- [36] Jose Luis Blázquez-Salcedo, Carlos A.R. Herdeiro, Jutta Kunz, Alexandre M. Pombo, and Eugen Radu. Einstein-Maxwell-scalar black holes: the hot, the cold and the bald. *Phys. Lett. B*, 806:135493, 2020. [arXiv:2002.00963](#), [doi:10.1016/j.physletb.2020.135493](#).
- [37] Peng Wang, Houwen Wu, and Haitang Yang. Scalarized Einstein-Born-Infeld black holes. *Phys. Rev. D*, 103(10):104012, 2021. [arXiv:2012.01066](#), [doi:10.1103/PhysRevD.103.104012](#).
- [38] Guangzhou Guo, Peng Wang, Houwen Wu, and Haitang Yang. Scalarized Einstein–Maxwell-scalar black holes in anti-de Sitter spacetime. *Eur. Phys. J. C*, 81(10):864, 2021. [arXiv:2102.04015](#), [doi:10.1140/epjc/s10052-021-09614-7](#). IIB
- [39] Guangzhou Guo, Peng Wang, Houwen Wu, and Haitang Yang. Scalarized Kerr-Newman black holes. *JHEP*, 10:076, 2023. [arXiv:2307.12210](#), [doi:10.1007/JHEP10\(2023\)076](#). I, IIB, III, III
- [40] Zakaria Belkhadria and Alexandre M. Pombo. Mixed scalarization of charged black holes: From spontaneous to nonlinear scalarization. *Phys. Rev. D*, 110(4):044014, 2024. [arXiv:2311.15850](#), [doi:10.1103/PhysRevD.110.044014](#). I
- [41] Qingyu Gan, Peng Wang, Houwen Wu, and Haitang Yang. Photon ring and observational appearance of a hairy black hole. *Phys. Rev. D*, 104(4):044049, 2021. [arXiv:2105.11770](#), [doi:10.1103/PhysRevD.104.044049](#). I
- [42] Qingyu Gan, Peng Wang, Houwen Wu, and Haitang Yang. Photon spheres and spherical accretion image of a hairy black hole. *Phys. Rev. D*, 104(2):024003, 2021. [arXiv:2104.08703](#), [doi:10.1103/PhysRevD.104.024003](#). I
- [43] Guangzhou Guo, Xin Jiang, Peng Wang, and Houwen Wu. Gravitational lensing by black holes with multiple photon spheres. *Phys. Rev. D*, 105(12):124064, 2022. [arXiv:2204.13948](#), [doi:10.1103/PhysRevD.105.124064](#).
- [44] Yiqian Chen, Guangzhou Guo, Peng Wang, Houwen Wu, and Haitang Yang. Appearance of an infalling star in black holes with multiple photon spheres. *Sci. China Phys. Mech. Astron.*, 65(12):120412, 2022. [arXiv:2206.13705](#), [doi:10.1007/s11433-022-1986-x](#).
- [45] Yiqian Chen, Peng Wang, and Haitang Yang. Interferometric Signatures of Black Holes with Multiple Photon Spheres. 12 2023. [arXiv:2312.10304](#).