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Universal Photonic Quantum Interface for a Quantum Network JIAN WANG, YUHAO PAN, BIHENG LIU, YUNFENG HUANG, CHUANFENG LI, GUANGCAN GUO, University of Science and Technology of China — Active research on mesoscopic quantum systems has increased our understanding of and ability to control quantum objects, allowing the construction of a universal form for quantum networks that consist of more than one physical system. This kind of quantum network is anticipated to enable the building of quantum infrastructure, such as long-distance quantum communication and distributed quantum computers, and motivates the establishment of photonic quantum interfaces that are compatible with physical systems. Here, a universal photonic quantum interface is experimentally developed with the benefit of a unique, specially designed entangled photon source. The detailed experimental results show that this configuration can satisfy all the urgent demands for a photonic quantum interface, including the accurate matching of the working wavelength and bandwidth and specifically, the entanglement ability (F=89.6% S=2.360.03). The realization of this universal photonic quantum interface is expected to expedite the construction of much more complex quantum networks and to be a major step in the area of optical engineering and control

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