Orbital angular momentum (OAM) antennas have received a fair bit of attention—and controversy—because of the promise of increased bandwidth and indefinitely large channel capacity. Considering the angular momentum of an electromagnetic wave to consist of the spin angular momentum (giving rise to circularly polarized orthogonal modes) and OAM (giving rise to linearly varying azimuth phase distributions), the idea is that OAM antennas will allow an arbitrarily large number of orthogonal modes for transferring information. Despite a number of successful demonstrations for optical communication links and despite its theoretical elegance, the concept does not seem to have found as much practical success for radio-frequency links. This is not to say that the concept is not physically sound—it is. But there have been analyses that show that, for higher-order modes (or vortices), the required aperture power to transmit the wave to a given distance grows nonlinearly with the mode order, and so does the required aperture size. Accordingly, while the promise of large OAM channel capacity may very well hold for short distances, by some accounts it becomes increasingly unrealistic for long-range communications. That said, there is quite a bit of ongoing work to explore the potential of OAM antennas. The underlying concept is appealing—it may be a matter of technology catching up with the physical principle.

IN THIS ISSUE
In this issue of IEEE Antennas and Propagation Magazine, we feature two articles focused on OAM antennas, covering both sides of the argument. Morabito et al. use a theoretical development based on aperture antenna theory to highlight the limitations of OAM antennas, especially for far-range applications. Veysi et al., while also highlighting current possible practical limitations of OAM antennas, propose a novel design concept using reflectarrays to achieve various multibeam far-field characteristics that may be used in future satellite and wireless communication systems. Given the potential impact of OAM antennas and the current conversation about their becoming practically feasible, I would be very interested in receiving more articles submitted to the magazine on this topic.

Along the lines of enhanced channel capacity and wide bandwidth, we also feature several other interesting articles in this issue. The article by Shaik et al. proposes an ultrawideband multifunctional antenna using a printed coplanar waveguide-fed annular ring monopole antenna. Deshmukh et al. describe several variations of isosceles triangular microstrip antennas for broadband response of more than 50% bandwidth. Kang and Kim analyze the performance of conductively loaded slot antenna in short-pulse radiation and reception applications both numerically and experimentally. Mohamed et al. develop a model for the time-varying effects of the movement of the human body on indoor wireless channels.

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