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Bangyan Wen, Yi Lin and Zengxiang Tong* (ztong@otterbein.edu), Department of Mathematical Sciences, Otterbein University, Westerville, OH 43081. *A New Set of Axioms for Metric Geometry.*

This paper proposes a new set of axioms for Metric geometry, which consists of (1) five primitive concepts (Point, Field, Distance, Direction, and Continuum Set of Points), (2) five existence postulates (Point, Sphere, Fields without Boundary, Fields with Boundary, and Continuum Set of Points), and (3) five relationship axioms: (a) Pair of Points 3-Statuses: Separation, Coincidence, Empty (b) Concentric Spheres 3-statuses: inner, upon, outer; (c) Iso-Spheres 3-Statuses: Separation, Tangency, Intersection, (d) Two planes 3-statuses: parallel, Intersection, Coincidence (e) The segments of two lines cut by three parallel planes are propositional.

*The new set of axioms has the following advantageous features:

(1) The straight lines and planes will have constructive definitions and non-Euclidean geometry will be understood differently. For example: A straight line is an ordered set of all tangent points of all spheres with centers at two given different points.

(2) It can combine different branches of Metric geometry, such as Euclidean geometry, affine geometry, Projective geometry, and vector geometry, etc., and make theoretical levels very clear.

(3) It is rigorous, concise, easy to understand, and suitable in geometry education. (Received September 13, 2016)