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Paradoxist Geometry

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PARADOXIST GEOMETRY

In 1969, intrigued by geometry, I simultaneously constracted a partially euclidean and partially nono-euclidean space by a strange replacement of the Euclid's fifth postulate (axiom of parallels) with the following five-statement proposition:

a) there are at least a strainght line and a point exterior to it in this space for which only one line passed through the point and does not intersect the initial line; [1 paralle]]

b) there are at least a strainght line and point exterior to it in this space for which only a finite number of lines $l_1, \ldots, l_k$ $(k \geq 2)$ passe throught the point and do not intersect the initial line; [2 or more (in a finite number) paraliels]

c) there are at least a strainght line and point exterior to it in this space for which any line that passes throught the point intersects the initial line; [0 parallels]

d) there are at least a strainght line and point exterior to it in this space for which an infinite number of lines that passes throught the point (but not all of them) do not intersect the initial line; [an infinite number of parallels, but not all lines passing throught]

e) there are at least a strainght line and a point exterior to it in this space for which any line that passes throught the point does not intersect the initial line; [an infinite number of parallels, all lines passing throught the point]

I have called it the PARADOXIST GEOMETRY. This geometry unites all together: Euclid, Lobachevsky/Bolyai, and Riemann geometries. And separates them as well!

Question 28:

Now, the problem is to find a nice model (on manifolds) for this Paradoxost Geometry, and study some of its characteristics.