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MORE CHARACTERIZATIONS ABOUT SOFT SETS AND SOFT CONTINUITY

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Abstract. We introduce and study the indicator soft sets $(Ind(A), \mathcal{P})$ where $A \subset \mathcal{P}$ and $\mathcal{P}$ is the set of parameters. We use the indicator soft sets to define the indicator soft topology $Ind(\tau)$ where τ is any topology on the set of parameters $\mathcal{P}$. We show that τ and $Ind(\tau)$ have the same corresponding properties: compactness, Lindelöf property, second-countable, separation axioms. We proved that a soft mapping $fpu : (\mathcal{U}, Ind(\tau), \mathcal{P}) \to (\mathcal{U}', Ind(\tau'), \mathcal{P}')$ is soft continuous (quasi-continuous, open, closed, soft homeomorphism) iff $p : (\mathcal{P}, \tau) \to (\mathcal{P}', \tau')$ is continuous (quasi-continuous, open, closed, homeomorphism). We use these results to generate counter examples for soft topological spaces. For example, we gave an example to show that soft quasi-continuous mapping are not soft continuous, another example to show that soft $T_3 - space$ are not soft T_4, and an example to show that none of the soft separation axioms are preserved under soft open mappings.

1. Preliminaries

The soft set theory is introduced In 1999 (see [12]) with various applications of the new theory. In 2003 the notation of soft subset, complement, union and intersections (see [11])are defined and studied . In 2010 soft topology is introduced by [17] and [3]. Other papers about soft topology appeared in 2011 (see [7] and [18]).

Soft points first defined in 2011 as points in the universe with certain criteria, see [17], and still in use by many authors, in 2012 [24] introduced soft functions and a new definition for soft points. Soft compactness first introduced by [24] and soft separation axioms by [8].

Up to the present, soft sets and topologies are still a very active area for research in the theoretical aspect specially concerning soft separation axioms [9],[14] and [27], and

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