Moreover, $\mathcal{O}\{\pi_\alpha F_\alpha(x), \pi_\alpha^\beta, \Lambda\} \subset \mathcal{O}\{F_\alpha \pi_\alpha(x), \pi_\alpha^\beta, \Lambda\}$.

So, (2) is true.

(3) It is directly by Lemma 3.1 and (2).

The following Lemma is directly.

Lemma 3.3 Let $F: X \to X$ is a continuous multifunction, and $F_\alpha : X_\alpha \to X_\alpha$ be defined as in Lemma 3.1. Let $P_\alpha = \{p_\alpha : X_\alpha \cap F_\alpha(p_\alpha)\}$.

Then $\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$ forms an inverse system.

Proof. It suffices to prove $\pi_\alpha^\beta(P_\alpha) \subset P_\beta$, whenever $\alpha < \beta$, which follows in a routine Way.

4. PROOF OF MAIN THEOREM

Since each X_α has $F.p.p.$ and F_α is continuous, P_α is nonempty closed subset. By Lemma 3.3, $\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$ is an linearly ordered systems of compact spaces, so it has a orbit space $\mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$. We assert that

$\forall x \in \mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$, $x \in F(x)$.

Let $\forall x \in \mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$, Then $\forall \alpha \in \Lambda$,

$\pi_\alpha(x) \in P_\alpha$. That is to say $\pi_\alpha(x) \in F_\alpha \pi_\alpha(x)$. So, by Lemma 2.4 and Lemma 3.2,

$$x = \mathcal{O}\{\pi_\alpha(x), \pi_\alpha^\beta, \Lambda\} \in \mathcal{O}\{F_\alpha \pi_\alpha(x), \pi_\alpha^\beta, \Lambda\} = F(x).$$

In fact, with the assumption of the main theorem and the notation of Lemma 3.3 together with the notation $P = \{x : x \in F(x)\}$, we have the following sharper assertion.

Theorem 3.4 $P = \mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$.

Proof. By the main theorem, we have

$P \supset \mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$. It remains to be proved that $P \subset \mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$.

Let $\forall x \in P$. Then $x \in F(x)$ and $\forall \alpha \in \Lambda$,

$$\pi_\alpha(x) \in \pi_\alpha F(x) \subset \pi_\alpha F(\pi_\alpha^{-1}\pi_\alpha)(x) = F_\alpha(\pi_\alpha(x)).$$

That is, $\pi_\alpha(x) \in P_\alpha$; It follows from Lemma 3.3 that $P \subset \mathcal{O}\{P_\alpha, \pi_\alpha^\beta, \Lambda\}$.

ACKNOWLEDGMENT

The author wish to thank the science project of Higher Education of GuangXi in China for contract KY2015LX778, under which the present work was possible.

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