

## **Dedication**

To my family for filling me with the sense of wonderful fatherhood.

## **Acknowledgment**

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## **Abstract**

We show the variational principles for topological entropies of subsets of a metric space. We established some fixed point properties for semigroups of nonlinear mappings and the extreme amenability of abelian topological groups. Homology theory for higher-rank graphs and twisted  $C^*$ -Algebras are considered.

## الخلاصة

تم توضيح اساسيات التغيرية للتغيرات الداخلية لطبولوجيا الفئات الجزئية من الفضاء المتري. تم تأسيس بعض خواص النقطة الثابتة لأشباه الزمر للتطبيقات غير الخطية والتبعية الابعد لزمر الطبولوجيا الابيلية . تم اعتبار نظرية الهومولوجي لبيانات الرتبة-العليا وجبريات  $C^*$  الالتوائية.

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