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| 指導教員 承認印 | |
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平成 30 年 3 月 26 日
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学位 (博士) 論文要旨
(Doctoral thesis abstract)

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| 論文題目 (Title) | Operator-based robust nonlinear control design for uncertain systems with disturbances (オペレータに基づく外乱をもつ不確かなシステムに対するロバスト非線形制御系設計) |
| 論文要旨 (2000 字程度) (Abstract (400 words)) ※欧文・和文どちらでもよい。但し、和文の場合は英訳を付すこと。 (in English or in Japanese) | |
| ABSTRACT | |
| This dissertation considers robust nonlinear control design for uncertain systems with disturbance using operator-based right coprime factorization method, which complements the theoretical analysis and control design of nonlinear systems. | |
| Firstly, by introducing a nonlinear operator controller, operator-based right coprime factorization is employed to consider the nonlinear system with disturbance. Then, based on the proposed feasible design schemes, adverse effect resulting from disturbance in nonlinear system is reduced. Secondly, the nonlinear systems with uncertainties and disturbances are considered by redesigning the feedback controller, which can deal with a broader class of nonlinear systems. Further, three cases respectively for illustrating the relationship between the proposed conditions and the internal uncertainties or disturbances. Meantime, by the proposed design scheme, both of robust stability and tracking performance are realized, which can get better performances. Thirdly, besides the above contributions, in this dissertation, bilinear operator-based right coprime factorization for a class of nonlinear systems with disturbance and perturbation is considered from the input-output view of point, which provides a quantitative analysis method for the appearing uncertainty and | |

disturbance. Robust stability of the considered nonlinear systems is guaranteed, which enriches the coprime factorization methods. Finally, a simulation example is provided to illustrate effectiveness of the proposed design scheme.