



فرم معرفی برنامه های حمایت شده توسط انجمن ایران IEEE

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عنوان جلسه / کارگاه به پارسی
Event title in English: Stabilization of Linear Systems Over Gaussian Interference Channels
Event language / زبان ارائه برنامه : English

نوع برنامه:	Professional: *	Technical: *	Nontechnical:	Administrative:	Tutorial:
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شرکت کنندگان (برای افراد زیر مجاز است):	Student members:	All members:	Public: *	All students (member or not)	Full members only
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Start date / شروع تاریخ	End date / تاریخ پایان	Start Time / زمان شروع	End Time / زمان پایان
۲۴ شهریور		۱۳:۰۰	۱۴:۰۰

Requires registration / نیاز ثبت نام	Yes:	No: ✓
Registration opens on:	Registration closes on:	*
Admission Fee (Rials) / هزینه ثبت نام به ریال		
Maximum admission / محدودیت کلی تعداد شرکت کنندگان		
توضیحات (پذیرایی، تخفیفات، غیره...):		

Building name / نام ساختمان	ساختمان شماره ۴ دانشکده مهندسی برق و کامپیوتر
Room number / شماره و یا نام سالن	اتاق ۸۰۴

Address / نشانی	پردیس دانشکده های فنی دانشگاه تهران
Map URL / لینک نقشه الکترونیکی	
Event website / لینک سایت اینترنتی برنامه	

Event description / چکیده برنامه

Rapid advances in sensing and wireless technologies have led to significant interest in the understanding and development of wireless networked control systems. Networked control systems consist of spatially distributed agents such as plants, sensors, actuators, and controllers. These agents need to communicate to meet certain control objectives, and in many applications this communication should preferably take place over wireless links to reduce cabling cost and to provide flexible and mobile solutions. A major hurdle in implementing wireless networked control systems is the interference which happens due to the cross-talk between various agents while using shared communication resources. There are also external sources of interference such as other radio devices communicating in the neighborhood. In certain situations, interference can be a major factor limiting performance of a networked control system.

In this talk, we consider the problem of remote stabilization of linear systems (plants) over interference channels. The linear systems are assumed to have random initial states; the sensors have average transmit power constraints; and the communication links between the sensors and the remote controllers are modeled as Gaussian channels. The objective is to stabilize the plants in mean-square sense. We present necessary conditions as well as sufficient conditions for mean-square stabilization of linear systems over the given Gaussian interference channel. The necessary conditions are arrived at using information theoretic tools. The sufficient conditions are obtained using delay-free sensing and control schemes. The necessary and the sufficient conditions reveal the effect of communication parameters such as transmit powers, channel interference, and channel noise on the stability of linear systems. Furthermore, the gaps between the necessary conditions and the sufficient conditions are evaluated. It is shown that delay-free linear sensing and control schemes can be close to optimal in some regimes. Moreover, in certain special cases, they are shown to be exactly optimal.