بيانــات عـن البحـث الأول المقـدم للترقيـة

1	رقم البحث فى القائمة المعتمدة
تقنيات جديدة لانشاء مجالات التماسكية مع تطبيقات على موتور التيار المستمر	عنوان البحث باللغة العربية
New Techniques for Construction of Consolidity Regions with Applications to DC Motors Control.	عنوان البحث باللغة الانجليزية
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البحث مشتق من رسالة الماجستير للباحثة أمنة مازن على	هل البحث مشتق من رسالة علمية؟

ملخص البحث باللغة الإنجليزية:

This paper proposes two mathematical methods for constructing the minimum area consolidity region (chart) under the condition of passing the major axis of ellipse through origin. The physical significance of the consolidity chart is that it marks the boundary of all system interactive behavior resulting from all exhaustive fuzzy internal and external influences. The shape and size of each consolidity geometric region determine how the feature of system susceptibility to change. Approximated results for drawing the consolidity region were obtained earlier as found in literature because it was done by a heuristic method that depends on sense rather than deterministic mathematical technique. The proposed techniques in this paper being dependent on mathematical and optimization rules, are proven to give exact reliable results as will be demonstrated in this paper. As an application, the proposed methods are applied to construct consolidity charts after consolidity analysis on designing controller gains via pole placement technique and consolidity analysis applied on DC motor. Consolidity analysis on designing controller gains via pole placement technique handles three cases of study. This analysis is proposed to be taken into consideration while designing new controllers and for the analysis of existing controllers in fuzzy environments. Finally, the paper is presenting a practical application, through the demonstration of consolidity analysis for the DC motor output position, its controllers, controllability and stability.