TP 05 Mesures des impédances RL+RC et lois d’associations.

Schémas de montage

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Matériel utilisé

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1. **CIRCUIT RL**
2. *Mesure de la résistance de la bobine*

Description de la manipulation

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| U  ( ) | UR  ( ) | Cal  ( ) | UL  ( ) | Cal  ( ) | I  ( ) | r  ( ) | I/I  (%) | r/r  (%) | r  ( ) |
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**I= ; r= ;I/I = ; r/r=**

Calculer UR+UL. Commenter

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1. *Mesure de l’inductance*

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| Générateur | Résistance | Bobine |
| **f(Hz)** | **E**  **( )** | **UR**  **( )** | **UL**  **( )** | **( )** | **I**  **( )** | **ZL**  **( )** | **Z**  **( )** |
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**I= ; ZL= ;Z = ;**

Tracer de la courbe **Z2= F()**

Commentaire sur la courbe

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Déduction graphique de l’induction Lg et de la résistance rg

rg=…………………………………………………………………………………………………………………

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Lg=…………………………………………………………………………………………………………………

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Comparaison entre la valeur de r et rg

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Comparaison entre les valeurs de ZL et Z

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L’expression de **Z pour les grandes fréquences** (L>>(R+r)

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***3. Association des bobines***

**Tension continue**

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| Montage | Générateur | | Résistance | | Bobine |
|  | **E (V)** | | **UR ( )** | | **UL ( )** | | **I( )** | **rS( )** | **rp( )** |
| **série** |  | |  | |  | |  |  |  |
| **parallèle** |  |  | |  | | |  |  |  |

**I= ; rs= ; rP =**

**Tension alternative**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Montage | Fréquence | Générateur | Résistance | Bobine |
|  | **f( )** | **E (V)** | **UR ( )** | **UL ( )** | **I ( )** | **ZS ( )** | **ZP( )** | **LS ( )** | **Lp( )** |
| **série** |  |  |  |  |  |  |  |  |  |
| **parallèle** |  |  |  |  |  |  |  |  |  |

**I= ; Zs= ;Zp = ; LS= ; LP=**

L’expression Théorique de Z’S et Z’P en fonction de r et L.

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Comparaison de rs et rp avec rg et de LS et LP avec Lg

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La loi d’association des inductances est-elle vérifier ?

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1. **Circuit RC**

Schémas de montage

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1. ***Détermination de la capacité d’un condensateur***

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| --- | --- | --- |
| Générateur | Résistance | Condensateur |
| f(Hz) | E  ( ) | UR  ( ) | UC  ( ) | ( ) | I  ( ) | ZC  ( ) | Z  ( ) |
|  | |  |  |  |  |  |  |  |
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**I= ; ZL= ;Z = ; =**

Tracer de la courbe **ZC= F(1/)**

Commentaire sur la courbe

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Déduction graphique de Cg

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Cg………………………………………………………………………………………………………………

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Comparaison entre les valeurs de ZC et Z

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L’expression de **Z pour les petites fréquences** (1/C>>R**)**

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1. ***Loi d’association des condensateurs***

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| --- | --- | --- | --- | --- |
| Montage | Fréquence | Générateur | Résistance | Condensateur |
|  | f( ) | E (V) | UR ( ) | UC( ) | I( ) | Z’S ( ) | Z’P( ) | CS ( ) | Cp ( ) |
| **série** |  |  |  |  |  |  |  |  |  |
| **parallèle** |  |  |  |  |  |  |  |  |  |

**I= ; Zs= ;ZL = ; CS= ; CP=**

Comparaison deCS et CP avec Cg

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La loi d’association des inductances est-elle vérifier ?

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**CONCLUSION**

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