Propriétés des opérations, modules et idéaux

Auteurs : Dedekind, Richard

En passant la souris sur une vignette, le titre de l'image apparaît.

2 Fichier(s)

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Présentation

TitrePropriétés des opérations, modules et idéaux
Date1885 ca.
Sujet

- divisibilité
- dualité
- idéaux
- modules
- modules finis
- nombres de classes
- notation2
- trois modules

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Description & Analyse

DescriptionCalculs sur les nombres de classes et relations entre opérations. Application aux idéaux. Cas général : (b-b')+(c-c')=(c-c')+(a-a')=(a-a')+(b-b') et dual.
Mode(s) d'écritureCalculs
Auteur·es de la descriptionHaffner, Emmylou

Relations

Collection Cod. Ms. Dedekind X 11-1

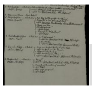
Ce document a les mêmes calculs que :

 Calculs sur des modules finis + Théorème général

Ce document est une version préliminaire de :

 Calculs sur des modules finis + Théorème général

Ce document utilise la même notation que :

 Meilleure présentation pour 3 modules a, b, c

Afficher la visualisation des relations de la notice.

Mots-clefs

divisibilité, dualite, idéaux, modules, modules finis, nombres de classes, notation2, trois modules

Notice créée par Emmylou Haffner Notice créée le 29/10/2018 Dernière modification le 21/07/2021

$\mathfrak{a} = [1, \omega]$	$\mathfrak{a}' = [2, \omega]$	$\mathfrak{b}' - \mathfrak{c}' = [1, \omega]$	$\mathfrak{a}_1 = [6, 2+5\omega]$	$\mathfrak{b}_1 + \mathfrak{c}_1 = [2, \omega] = \mathfrak{a} - \mathfrak{a}'$
$\mathfrak{b} = [2, \omega]$	$\mathfrak{b}' = [1, \omega]$	$\mathfrak{c}' - \mathfrak{a}' = [2, \omega]$	$\mathfrak{b}_1 = [6, 2+5\omega]$	$\mathfrak{c}_1 + \mathfrak{a}_1 = [2, \omega] = \mathfrak{b} - \mathfrak{b}'$
$\mathfrak{c} = [6, 2+5\omega]$	$\mathfrak{c}' = [1, \omega]$	$\mathfrak{a}' - \mathfrak{b}' = [2, \omega]$	$\mathfrak{c}_1 = [2, \omega]$	$\mathfrak{a}_1 + \mathfrak{b}_1 = [6, 2+5\omega] = \mathfrak{c} - \mathfrak{c}'$

$$(\mathfrak{a} - \mathfrak{a}', \mathfrak{b}_1 + \mathfrak{c}_1) = (\mathfrak{a} - (\mathfrak{b}+\mathfrak{c}), (\mathfrak{c} - \mathfrak{a}) + (\mathfrak{a} - \mathfrak{b})) = (\mathfrak{a} - (\mathfrak{b}+\mathfrak{c}), \cancel{\mathfrak{a}}\, (\mathfrak{b} + (\mathfrak{c} - \mathfrak{a})))$$

$$(\mathfrak{b}' - \mathfrak{c}', \mathfrak{a} + \mathfrak{a}_1) = ((\mathfrak{c}+\mathfrak{a}) - (\mathfrak{a}+\mathfrak{b}), \mathfrak{a} + (\mathfrak{b} - \mathfrak{c}))$$

$$\mathfrak{a} + \mathfrak{a}_1 < (\mathfrak{b} + \mathfrak{b}_1) - (\mathfrak{c} + \mathfrak{c}_1)$$

Jede Zahl in $\mathfrak{a} - \mathfrak{a}' = \mathfrak{a} - (\mathfrak{b}+\mathfrak{c})$ hat die Form

$\alpha = \beta + \gamma$; da keine $\beta = \alpha - \gamma$, $\gamma = \alpha - \beta$ folgt

soweit β in $\mathfrak{b} - (\mathfrak{a}+\mathfrak{c}) = \mathfrak{b} - \mathfrak{b}'$

γ in $\mathfrak{c} - (\mathfrak{a}+\mathfrak{b}) = \mathfrak{c} - \mathfrak{c}'$

$\delta = \beta + \beta_1 = \gamma + \gamma_1$	$\beta - \gamma_1 = \gamma - \beta_1 = \alpha_1$
$\beta_1 = (\gamma) = (\alpha)$	$\gamma_1 = \beta - \alpha_1$
$\gamma_1 = (\alpha) = (\beta)$	$\beta_1 = \gamma - \alpha_1$

$\delta = \beta + \gamma - \alpha_1$

$= \alpha_1 + \beta_1 + \gamma_1$

d. h.

$$\left.\begin{array}{l} \mathfrak{a} - \mathfrak{a}' > (\mathfrak{b} - \mathfrak{b}') + (\mathfrak{c} - \mathfrak{c}') \\ \mathfrak{b} - \mathfrak{b}' > (\mathfrak{c} - \mathfrak{c}') + (\mathfrak{a} - \mathfrak{a}') \\ \mathfrak{c} - \mathfrak{c}' > (\mathfrak{a} - \mathfrak{a}') + (\mathfrak{b} - \mathfrak{b}') \end{array}\right\} (\mathfrak{a} - \mathfrak{a}') + (\mathfrak{b} - \mathfrak{b}') > (\mathfrak{b} - \mathfrak{b}') + (\mathfrak{c} - \mathfrak{c}') \text{ folglich immer } [illegible]$$

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Allgemein $= \mathfrak{a}' - \mathfrak{b}' - \mathfrak{c}'$

$$\boxed{\begin{array}{l} (\mathfrak{b} - \mathfrak{b}') + (\mathfrak{c} - \mathfrak{c}') = (\mathfrak{c} - \mathfrak{c}') + (\mathfrak{a} - \mathfrak{a}') = (\mathfrak{a} - \mathfrak{a}') + (\mathfrak{b} - \mathfrak{b}') \\ (\mathfrak{b} + \mathfrak{b}_1) - (\mathfrak{c} + \mathfrak{c}_1) = (\mathfrak{c} + \mathfrak{c}_1) - (\mathfrak{a} + \mathfrak{a}_1) = (\mathfrak{a} + \mathfrak{a}_1) - (\mathfrak{b} + \mathfrak{b}_1) \\ \qquad = \mathfrak{a}_1 + \mathfrak{b}_1 + \mathfrak{c}_1 \end{array}} \begin{array}{l} \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c} \\ \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c} \end{array}$$

~~$\mathfrak{a} - (\mathfrak{a} - \mathfrak{a}') > \mathfrak{a} + (\mathfrak{b} - \mathfrak{b}') + (\mathfrak{c} - \mathfrak{c}')$~~

~~d. h. $\mathfrak{a}' > \mathfrak{b}' - \mathfrak{c}'$~~

\# Ideale :

$\mathfrak{a} = \mathfrak{m}\mathfrak{b}\mathfrak{c}\mathfrak{a}'$	$\mathfrak{b} + \mathfrak{c} = \mathfrak{a}' = \mathfrak{m}\mathfrak{a}$; $\mathfrak{b} - \mathfrak{c} = \mathfrak{a}_1 = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}\mathfrak{b}'\mathfrak{c}'$
$\mathfrak{b} = \mathfrak{m}\mathfrak{c}\mathfrak{a}\mathfrak{b}'$	$\mathfrak{c} + \mathfrak{a} = \mathfrak{b}' = \mathfrak{m}\mathfrak{b}$; $\mathfrak{c} - \mathfrak{a} = \mathfrak{b}_1 = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}\mathfrak{c}'\mathfrak{a}'$
$\mathfrak{c} = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}'$	$\mathfrak{a} + \mathfrak{b} = \mathfrak{c}' = \mathfrak{m}\mathfrak{c}$; $\mathfrak{a} - \mathfrak{b} = \mathfrak{c}_1 = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}\mathfrak{a}'\mathfrak{b}'$

$$(\mathfrak{b} - (\mathfrak{c}+\mathfrak{a})) + (\mathfrak{c} - (\mathfrak{a}+\mathfrak{b}))$$

$\mathfrak{b}' - \mathfrak{c}' = \mathfrak{m}\mathfrak{b}\mathfrak{c} = \mathfrak{a} + \mathfrak{a}_1$	$\mathfrak{b}_1 + \mathfrak{c}_1 = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}\mathfrak{a}' = \mathfrak{a} - \mathfrak{a}'$
$\mathfrak{c}' - \mathfrak{a}' = \mathfrak{m}\mathfrak{c}\mathfrak{a} = \mathfrak{b} + \mathfrak{b}_1$	$\mathfrak{c}_1 + \mathfrak{a}_1 = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}\mathfrak{b}' = \mathfrak{b} - \mathfrak{b}'$
$\mathfrak{a}' - \mathfrak{b}' = \mathfrak{m}\mathfrak{a}\mathfrak{b} = \mathfrak{c} + \mathfrak{c}_1$	$\mathfrak{a}_1 + \mathfrak{b}_1 = \mathfrak{m}\mathfrak{a}\mathfrak{b}\mathfrak{c}\mathfrak{c}' = \mathfrak{c} - \mathfrak{c}'$

$\mathfrak{m} = \mathfrak{a} + \mathfrak{b} + \mathfrak{c}$	
$\mathfrak{a} = \dfrac{\mathfrak{b}+\mathfrak{c}}{\mathfrak{a}+\mathfrak{b}+\mathfrak{c}}$	$\mathfrak{a}' = \dfrac{\mathfrak{a}(\mathfrak{a}+\mathfrak{b}+\mathfrak{c})}{(\mathfrak{c}+\mathfrak{a})(\mathfrak{a}+\mathfrak{b})}$
$\mathfrak{b} = \dfrac{\mathfrak{c}+\mathfrak{a}}{\mathfrak{a}+\mathfrak{b}+\mathfrak{c}}$	$\mathfrak{b}' = \dfrac{\mathfrak{b}(\mathfrak{a}+\mathfrak{b}+\mathfrak{c})}{(\mathfrak{a}+\mathfrak{b})(\mathfrak{b}+\mathfrak{c})}$
$\mathfrak{c} = \dfrac{\mathfrak{a}+\mathfrak{b}}{\mathfrak{a}+\mathfrak{b}+\mathfrak{c}}$	$\mathfrak{c}' = \dfrac{\mathfrak{c}(\mathfrak{a}+\mathfrak{b}+\mathfrak{c})}{(\mathfrak{b}+\mathfrak{c})(\mathfrak{c}+\mathfrak{a})}$

Im Allgemeinen ist aber nur

$\mathfrak{b}' - \mathfrak{c}' < \mathfrak{a} + \mathfrak{a}_1$	und	$\mathfrak{b}_1 + \mathfrak{c}_1 > \mathfrak{a} - \mathfrak{a}'$
$\mathfrak{c}' - \mathfrak{a}' < \mathfrak{b} + \mathfrak{b}_1$		$\mathfrak{c}_1 + \mathfrak{a}_1 > \mathfrak{b} - \mathfrak{b}'$
$\mathfrak{a}' - \mathfrak{b}' < \mathfrak{c} + \mathfrak{c}_1$		$\mathfrak{a}_1 + \mathfrak{b}_1 > \mathfrak{c} - \mathfrak{c}'$

Braunschweig, den 20 Mai 1885

RECHNUNG

für Herrn Professor Dedekind hier

von

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Dedt

über

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