```
card_split_sigma_dom_decbl  THM

⊢  ∀A:Type, B:(A→Type), P:(A→Prop).
|  (∀i:A. Dec(P(i)))
|  ⇒
|  ((i:A×B(i)) ∼ ((i:{i:A| P(i) }×B(i))+(i:{i:A| ¬P(i) }×B(i))))
| by Auto
|
1. A : Type
2. B : A→Type
3. P : A→Prop
4. ∀i:A. Dec(P(i))
⊢  (i:A×B(i)) ∼ ((i:{i:A| P(i) }×B(i))+(i:{i:A| ¬P(i) }×B(i)))
| by Inst:
|    Thm*  (∀x:A. Dec(P(x))) ⇒ (A ∼ ({x:A| P(x) }+{x:A| ¬P(x) }))
|    {card_split_decbl}
|    Using:[A:= i:A×B(i) | P(x):= P(x.1)] ;
|    Rewrite by
|    Thm*  ∀B:(A→Type), P:(A→Prop).
|          (i:{i:A| P(i) }×B(i)) ∼ {v:(i:A×B(i))| P(v.1) }
|    {card_sigma_st_dom}
|
⊢  (i:A×B(i)) ∼ ({v:(i:A×B(i))| P(v.1) }+{v:(i:A×B(i))| ¬P(v.1) })
| by Rewrite by
|    Thm*  (∀x:A. Dec(P(x))) ⇒ (A ∼ ({x:A| P(x) }+{x:A| ¬P(x) }))
|    {card_split_decbl}
|
⊢  (i:A×B(i)) ∼ (i:A×B(i))  by Auto
END
```