```
hsuc_def  THM

⊢  all(λm:hnum. equal(suc(m),abs_num(suc_rep(rep_num(m)))))
| by HN THEN StrongAuto
|
1. m : ℕ
⊢  m+1 = abs_num(suc_rep(rep_num(m)))
| by Inst
|    Thm* ∀'a,'b:S, P:('b→𝔹), rep:('a→'b), abs:('b→'a), a:'a, r:'b.
|         iso_pair('a;'b;P;rep;abs) ⇒ rep(a) = r ⇒ a = abs(r)
|    {iso_pair_rep_to_abs}
|    [ℕ;ℕ;is_num_rep;rep_num;abs_num]
|    THEN
|    StrongAuto
|    THEN
|    BackThru -1
|    THEN
|    StrongAuto
|
|\
| 1. ℕ
| 2. ∀a,r:ℕ.
|    iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
|    ⇒
|    rep_num(a) = r ⇒ a = abs_num(r)
| ⊢  iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
|   by L Thm* iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)    {num_iso}
|      THEN
|      StrongAuto
|
.\
. 1. m : ℕ
. 2. ∀a,r:ℕ.
. |  iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
. |  ⇒
. |  rep_num(a) = r ⇒ a = abs_num(r)
. ⊢  rep_num(m+1) = suc_rep(rep_num(m))
. | by Assert (m+1>0) THEN StrongAuto THEN UnfoldFirst ‘hrep_num‘ 0
. |    THEN
. |    Simp
. |    THEN
. |    StrongAuto
. |
. 1. m : ℕ
. 2. ∀a,r:ℕ.
. |  iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
. |  ⇒
. |  rep_num(a) = r ⇒ a = abs_num(r)
. 3. m+1>0
. ⊢  suc_rep(ncompose(suc_rep;m+1-1;zero_rep)) = suc_rep(rep_num(m))
. | by Analyze THEN StrongAuto
. |
. .....subterm .....
. 1. m : ℕ
. 2. ∀a,r:ℕ.
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. |  iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
. |  ⇒
. |  rep_num(a) = r ⇒ a = abs_num(r)
. 3. m+1>0
. ⊢  ncompose(suc_rep;m+1-1;zero_rep) = rep_num(m)
. | by Assert (rep_num(m+1-1) = rep_num(m))
. |
. |\
. | .....assertion .....
. | 1. m : ℕ
. | 2. ∀a,r:ℕ.
. | |  iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
. | |  ⇒
. | |  rep_num(a) = r ⇒ a = abs_num(r)
. | 3. m+1>0
. | ⊢  rep_num(m+1-1) = rep_num(m)  by Analyze THEN StrongAuto
. | |
. | .....subterm .....
. | 1. m : ℕ
. | 2. ∀a,r:ℕ.
. |    iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
. |    ⇒
. |    rep_num(a) = r ⇒ a = abs_num(r)
. | 3. m+1>0
. | ⊢  m+1-1 = m  by Analyze THEN StrongAuto
. |
. .\
. . 1. m : ℕ
. . 2. ∀a,r:ℕ.
. .    iso_pair(ℕ;ℕ;is_num_rep;rep_num;abs_num)
. .    ⇒
. .    rep_num(a) = r ⇒ a = abs_num(r)
. . 3. m+1>0
. . 4. rep_num(m+1-1) = rep_num(m)
. . ⊢  ncompose(suc_rep;m+1-1;zero_rep) = rep_num(m)
. .   by Unab [‘hrep_num‘] THEN All AbReduce THEN StrongAuto
END
```